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CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT.

ADDRESSES AND ORIGINAL ARTICLES.

Trigeminal Neuralgia and Its Treatment. By WILFRED HARRIS, F.R.C.P. 567
Some Lessons of the Distribution of Infectious Diseases in the Royal Navy. By Surg.-Capt. SHELDON F. DUDLEY, R.N., M.R.C.P.—(*Illustrated*) 570
Skin Eruptions Following Vaccination. By H. D. CHALKE, M.R.C.S., D.P.H.—(*Illustrated*) ... 578
Modifications of Kirschner's Wire Extension Method. By C. MAX PAGE, F.R.C.S.—(*Illustrated*) .. 582
A Simple Method for Blood Culture. By J. E. MCCARTNEY, M.D.—(*Illustrated*) 583

CLINICAL AND LABORATORY NOTES.

Thrombo-phlebitis Migrans in Asiatics. By G. CARMICHAEL LOW, F.R.C.P., and A. BRAMWELL COOK, M.R.C.P., D.T.M. & H. 584
Thyroid Tolerance and Benefit in Obesity. By HILDRED CARLILL, M.D. 585

MEDICAL SOCIETIES.

Royal Society of Medicine: Section of Anæsthetics.—Barbiturates in Anæsthesia 586
Sections of Psychiatry and Inebriety: Prevention and Treatment of Drug Addiction 587
Liverpool Medical Institution: Anæsthesia in Childbirth 588
Sheffield Medico-Chirurgical Society: Injection in Hæmorrhoids 590

NEW INVENTIONS.

A New Syringe Case. By MILROY PAUL, M.R.C.P.—(*Illustrated*) 585

REVIEWS AND NOTICES OF BOOKS.

A Short Practice of Gynæcology. By Henry Jellett, F.R.C.P., and Prof. R. E. Tottenham, F.R.C.P. .. 591
Lehrbuch des Stoffwechsels und der Stoffwechselkrankheiten. By Prof. S. J. Thannhauser 591
Diseases of Children. By Bruce Williamson, M.R.C.P. 591
The Human Body. By Logan Clendening, M.D. 592
William Stewart Halsted, Surgeon. By W. G. MacCallum 592
Bell's Sale of Food and Drugs. By R. A. Robinson 592

LEADING ARTICLES.

THE END OF STATUS LYMPHATICUS 593
HEGI'S FLORA 594
ACCESSORIES TO ANÆSTHETICS 595
THE OUT-PATIENT QUEUE 595

ANNOTATIONS.

International Quarantine .. 596
Tissue Repair and Bodily Reaction 596
The Medical and Dental Registers 597
Erythema Nodosum and Tuberculosis 597
Provincial Hospitals and Pathological Research .. 597
Diphtheria in Berlin 598
Operative Treatment of Piles 598
Centenary of the British Medical Association 599
Vital Statistics in the Tropics 599
Exempted Heroin Preparations 599
Macloghlin Scholarships for Medical Students 600
Secondary Effects of Repeated Enemata 600
The Elusive Ether 600

REPORTS AND ANALYSES.

Marshall's Lysol 590

A POST-GRADUATE COURSE.

Motives and Mechanisms of the Mind. X.—Guilt and Inferiority. B.—Inferiority. By Dr. E. GRAHAM HOWE 601

SPECIAL ARTICLES.

Prevention of Blindness. Foundation of an International Association.... 605
The Abolition of Bills of Health. By GILBERT E. BROOKE 606
Medical Society of London: Annual Dinner 607
Scotland: Minerals in Pasture.—Drug Addiction 608
Ireland: School Hours.. 609
United States of America: Health in 1930.—Dangers of Methyl-alcohol..... 609
Budapest: Dietetic Restaurants.—Thallium Poisoning 610
An All-India Institute of Public Health: the Rockefeller Gift.—(*Illustrated*) 611
Infectious Disease in England and Wales.... 613

CORRESPONDENCE.

The Irradiation of Schoolchildren (Sir Leonard Hill) 614
Scharlieb Memorial 614
Gastric Syphilis (Dr. David Smith) 615
The Brighton Rheumatism Clinic (Dr. Graham-Bonnalie and others).... 615
Nord-Sud Tours (Dr. J. H. Stormont) 616
Our Oldest Subscriber (Dr. J. Gairdner) 624

OBITUARY.

Hugh Percy Dunn, F.R.C.S. 612
Douglas Drew, F.R.C.S... 612

THE SERVICES.

Royal Naval Medical Service.—Royal Army Medical Corps.—Indian Medical Service.—Colonial Medical Service 613

PARLIAMENTARY INTELLIGENCE.

Notes on Current Topics: Army Estimates 616
House of Lords: Yarmouth Naval Hospital Bill.... 617
House of Commons: Women Medical Practitioners in the Gold Coast.—Hygiene Lessons in Schools.—Paratyphoid Fever at Epping.—Charges for Government Lymph.—Mental Treatment for Out-patients.—National Health Insurance Funds.—Slum Clearance Scheme 618

MEDICAL NEWS.

University of Cambridge.. 619
Birmingham Women's Hospital 569
Middlesex Hospital Nurses' Home 578
Ophthalmic Hospitals.... 604
Royal Medical Benevolent Fund 610
London Homœopathic Hospital 613
Donations and Bequests.. 618
King Edward's Hospital Fund for London..... 619
British Social Hygiene Council 619
Instruction for D.P.H..... 619
Tuberculosis Association.. 619
Hospitals at Brighton.... 619
Queen Charlotte's Birthday Ball 619

NOTES, COMMENTS, AND ABSTRACTS.

"Reasonableness" or Hospitals as Factories. By A. R. FRIEL, M.D..... 622
Experimental Transmission of Human Leprosy 622
Sodium Amytal and the Diseased Heart 623
Inoculation of Infants with B C G 624
A Multiple Avitaminosis 624
Jewish Law and Autopsies 624
Important People..... 624

Births, Marriages, Deaths 619
Medical Diary 620
Appointments 621
Vacancies 621

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By Wilfred Harris, M.D. Camb., F.R.C.P. Lond.,

SENIOR PHYSICIAN TO ST. MARY'S HOSPITAL AND TO THE HOSPITAL FOR EPILEPSY AND PARALYSIS, MAIDA VALE.

Although pain of various kinds in the face is one of the commonest ailments which we are called upon to treat, there is one form of facial neuralgia which overshadows all others in the severity of the agony produced, and also in its inveterate persistency. This disease, known as trigeminal neuralgia, or tic douloureux, has been known for hundreds of years. Probably well known to the Arabian physician, Avicenna, it was doubtless often met with in England as early as the thirteenth century, for Bishop Button's tomb in Wells Cathedral became the object of veneration, as the patron Saint for sufferers from facial neuralgia, of large numbers of pilgrims, whose gifts enriched the foundation, and in whose memory were carved those curious figures on the capitals of the columns near the tomb of the saint. Some of them, such as the well-known "Toothache" figure, or that of the monk with open mouth and semi-protruded twisted tongue, are perfect examples of sufferers in torture with neuralgic spasms. Indeed, though no written record of the Bishop's interest in the disease remains, it might perhaps as well be called "Button's disease" as to be named after Dr. Fothergill, who first described it properly in this country in 1783. In the course of a long and busy practice he observed 14 cases of this type of neuralgia, which from its persistence and inveterate recurrence he ascribed to cancer, a view which we now know to be mistaken.

One hundred years before his time the notorious Judge Jeffries was said to have suffered from it, which, if a fact, may perhaps be held as a slight excuse for his violent treatment of many of the prisoners brought before him. Another famous sufferer from this complaint was Lord Lawrence, of the Indian Mutiny. In his case a curious effect of emotion on the disease was the sudden cessation of the neuralgic spasms on his learning of the outbreak of the Mutiny, though the disease recurred later after the trouble was over. Cessation of the neuralgia entirely for months at a time, or even for years, is a common feature, especially in the earlier years of the complaint, the intervals of freedom gradually becoming shorter. Usually commencing after middle life, it occasionally begins even in the early twenties, or 'teens, the youngest age I have met with personally being 12 in two cases. One of them was a lady aged 65, who had suffered with the neuralgia for 53 years, never having been able to venture outside her house for the last 20 years, until she was cured by alcohol injection.

Ætiology.

Changes of weather have no particular effect on the pain, except that cold winds are apt to aggravate the spasms. Hot summer is no more beneficial than the cold of winter, and it is useless to send patients away to Madeira, Egypt, or similar warm climates in the vain hope of thus alleviating their distress. Emotion I have referred to as having arrested the pain. More often a sudden violent emotion, such as a piece of bad news or a painful parting, may precipitate the first onset of the neuralgic spasms. I have known it start within three-quarters of an hour in a woman whose child was run over and killed by a motor. Another lady who was much upset by the news of the sinking of the *Lusitania*, commenced to suffer within a day or two of the event. Again, another first felt the pain on the day after the shock of finding her husband lying dead. Similarly, prolonged worry and mental strain may have a similar effect. Once started, however, though the severity of the attacks may diminish or even cease for a time, recurrence is inevitable in true tic douloureux.

EXCITING CAUSES.

Many different exciting causes may start the disease, in addition to cold wind or violent emotion. A blow on the jaw or face has many times preceded the initial spasm, in one of my cases only one and a half hours previously. A severe dental extraction is another initial cause in some cases, and an antral abscess in others. In the large majority, however, no definite exciting cause can be traced, the neuralgia either starting suddenly and violently in the upper or lower jaw on one side, and recurring at various intervals, or in other cases commencing as a slight twinge which may be mistaken for toothache. In others, intensely sensitive spots such as the lower side of the nose or upper lip may develop, the slightest touch on these causing a paroxysm of pain. These are known as "trigger" zones. Rarely does this type of neuralgia commence in the supraorbital area, the very large majority affecting either the upper or the lower jaw on one side. In the few cases in which the spasmodic pain shoots up the forehead to the top of the head the pain is never limited to the first or ophthalmic division of the nerve, invariably ultimately spreading into the cheek and side of the nose to the upper lip, indicating the involvement of the second division.

It is especially the middle and lower divisions of the fifth nerve that are liable to this severe neuralgia, and this gives a clue to the original causation of the disease. No other nerve, with the rare and solitary exception of the glossopharyngeal, is subject to this type of neuralgia, that is to say, it is the two sensory nerves serving the buccal cavity that are subject to tic douloureux. These two nerves, supplying the buccal cavity, are subject in the majority of people to constantly recurring sepsis in their terminal branches in the gums, teeth, and tonsils, to a degree that no other nerves in the body are exposed, and it can scarcely be doubted that chronic septic neuritis of the terminal nerve filaments of these two cranial nerves is the primary cause of their becoming foci of neuralgic spasms. Further evidence in the case of the fifth nerve at least is afforded by the absence of any pathological changes in the nerve trunks or Gasserian ganglion, and the absence of any anæsthesia or trophic changes in the territory of the affected nerve. Even more conclusive is the fact that division of the nerve trunk, or nerve blocking by injection of the nerve trunk with alcohol, arrests the neuralgic spasms at once, until regeneration of the nerve takes place, a process which on the average takes perhaps two years. If a longer period of immunity from pain must be secured, as, for example, in a patient who is unable to return for treatment

* An address given before the South-Western London Medical Society on March 11th, 1931.

owing to living in a distant part of the world, then the Gasserian ganglion itself must either be injected with alcohol, so as to produce permanent anæsthesia of the second and third divisions, and perhaps of the ophthalmic division also, or else the open Gasserian operation must be undertaken for section of the posterior root behind the ganglion.

DISTRIBUTION.

Commoner in women than in men, in the proportion roughly of three to two, the average age of commencement of trigeminal neuralgia is about the age of 50, though I have known it commence as early as 12 in two cases, and as late as 87. The upper and lower jaws are affected more or less equally, though the disease is commoner on the right side. The first or ophthalmic division is probably never affected alone, without the second division also becoming involved, though I have seen typical tic limited to the first division for three and a half years before the neuralgia spread to the side of the nose and upper lip.

One characteristic of this type of neuralgia is its limitation to the anatomical area of the nerve-supply, never crossing the middle line, or spreading to the back of the head. It is true that very occasionally the pain may be bilateral, that is to say, that true tic douloureux may affect both sides of the face. This occurs in about 4 per cent. of all cases, and usually the pain is much more severe on one side than on the other. The treatment will be the same as for unilateral cases, except that the open Gasserian operation must not be done on both sides, unless the surgeon can guarantee to spare the motor root, owing to the serious danger of jaw-drop from bilateral palsy of the biting muscles. Although jaw-drop will occur after bilateral injection of the ganglion, if the two injections are done within a few weeks of each other, yet the weakness passes off after about three months, as the motor root fibres regenerate, their trophic centre being within the pons, whereas the sensory fibres have their trophic centre in the nerve cells of the ganglion, and therefore when these are destroyed, the anæsthesia is permanent.

CLINICAL ASSOCIATIONS.

Genuine trigeminal neuralgia is met with occasionally complicating cases of *disseminated sclerosis*. These occur sufficiently often to exclude coincidence as the explanation, as I have met with no less than 35 instances of this association. This is to be distinguished from the trigeminal neuritis which is occasionally met with in the early history of some disseminated cases, in which transitory numbness of the face on one side, with anæsthesia, persists for two or three months, usually disappearing entirely; these cases complain of little or no pain. On the other hand, there is never any trace of anæsthesia on the face in the neuralgic cases of disseminated sclerosis, and these react to injection treatment of the neuralgia precisely the same as in the ordinary cases. A larger proportion of these cases suffer from bilateral neuralgia than in those which are unassociated with disseminated sclerosis, which perhaps might be expected if a factor in the development of the neuralgia is the proximity of plaques of sclerosis to the spinal roots of the fifth nerves in the pons and medulla.

Clonic facial spasm is another curious association in a small percentage of cases of this type of neuralgia. The number is too large to be explained by coincidence, and, moreover, the clonic facial spasm is always on the same side as the neuralgia. I can find no further association between the two conditions, and arrest of the neuralgia by alcohol injection of the affected fifth nerve trunk has no effect on the facial spasm, which persists unaltered, unless the facial nerve is also injected behind the ramus of the mandible or at the stylo-mastoid foramen. Of course, it is necessary to distinguish between the grimacing and screwing up of the face that commonly occurs during a painful paroxysm, and the clonic spasms of facial muscles, which are limited to one side, and are continued between the bouts of pain. Some years ago Cushing described severe facial neuralgia resembling tic douloureux associated with clonic facial spasm, in three patients who were not relieved of the pain by the Gasserian operation. I have never met with a similar case, nor have others been published, so far as I can ascertain.

Heredity of the actual neuralgia is met with in about 2 per cent. of the cases, and in two instances I have treated the parent for trigeminal neuralgia, and the child for disseminated sclerosis.

CHARACTER OF THE PAIN.

The type of pain in chronic paroxysmal trigeminal neuralgia may be described as flashing and shooting like electricity, often giving a sensation as of red-hot needles stabbing the face, or like knives sticking in. The initial onset of the pain may be extremely violent and sudden, and I have known a patient wake up in the night screaming in violent pain in her first attack. The paroxysms recur at various intervals, each lasting only half a minute or more, though in others the stabbing pains may continue almost without any cessation for as long as 20 minutes. Between the bouts of pain the patient may be quite free except for some slight hyperæsthesia of the face, and often some flushing and even slight swelling may be noticeable. Salivation is common during the attacks, in some sufferers the mouth being fixed open, and the tongue slightly protruding on one side. The attacks are often started by the movements of the jaw in eating or talking, or by handling the face when washing, so that when the neuralgic attacks are particularly frequent and severe, some patients will leave that side of the face untouched for days, or even weeks, and the taking of food may be so difficult that semi-starvation may result, with considerable weakness. After a period of some weeks with frequently recurring painful paroxysms, if no drastic treatment is undertaken by injection or operation, the neuralgic attacks may subside gradually, or even disappear entirely for months, or in some cases for years before the trouble recurs. Usually the periods of remission become shorter as the years pass, until the sufferer is rarely free entirely for more than a few hours or perhaps days. In some cases, even from the commencement, the pain recurs frequently every day, meal times or handling the face in any way being especially productive of the neuralgic spasms.

Treatment.

The treatment of trigeminal neuralgia will depend on the severity of the pain and the duration of the disease, and to a certain extent on the age of the patient. In a few cases the severity of the pain seems to be comparatively slight, and does not interfere sufficiently with the normal life and work of the patient to justify any more drastic treatment than radiant heat, ionisation, and perhaps gelsemium and the milder drug analgesics administered internally. Morphia, heroin, and cocaine must be avoided entirely, as in this disease perhaps more than in any other the danger of a drug habit being induced is serious. It is difficult for a doctor or other onlooker to gauge the severity of an attack of neuralgia. Some patients

will react excessively, throwing themselves about or screaming, while another may show little more than slight twitching of the facial muscles, with inability to speak for a few moments. Yet the slight signs exhibited in the second case may be due to the restraint of an iron will and pluck, though his (or her) suffering may be equal or even greater than in the other. When milder methods fail to relieve, or if the paroxysms are severe and frequent, then one of two methods must be chosen in order to make relief certain. Either the open Gasserian operation for resection of the sensory root within the cranium must be undertaken by a skilled surgeon, or else alcohol injection of the offending nerve trunk must be performed at either the foramen ovale or rotundum, as the case may be.

Injection is, I think, always to be preferred in the first instance in all cases, as in a considerable number the cure appears to be permanent, even without injection of the ganglion itself. When both upper and lower jaws are involved in the neuralgia, requiring injection of the second and third divisions separately, the immunity from pain rarely lasts more than two years, and I then prefer to attempt injection of the ganglion itself. In a large proportion of cases I have been able to do this successfully through the foramen ovale, and since my first ganglion injection in 1910 many scores of patients have thus obtained permanent relief. In younger subjects, under the age of 55, should recurrence of the neuralgia take place within one and a half years of the first injection, it is probably wise to inject the ganglion at once. If this proves feasible, the cure should be permanent, but if it is for any reason impossible to do this, then the open Gasserian operation should be advised, in order to avoid recurring injections every year or two, which almost certainly become more difficult on each occasion. In older persons over the age of 75 I do not think the open Gasserian operation is advisable.

TECHNIQUE OF INJECTION.

The technique necessary for these injections I have given in detail elsewhere.[1] With regard to the use of a general anæsthetic, further experience has decided me strongly in favour of morphine-hyoscine anæsthesia, as against the use of either chloroform or ether inhalation narcosis. With the latter, one is apt to feel a little hurried, and the use of the mask over the face and the position of the anæsthetist both interfere with the free manipulation of the needle that is required.

With morphine-hyoscine the greatest deliberation of movement is easy, and this is a valuable point, whereas vomiting never occurs during the operation, though this complication is common with an inhalation anæsthetic, when the patient is allowed to come round for testing purposes. If the proper amount of morphine-hyoscine is used, and sufficient time allowed for its action, its general anæsthetic action is ideal, so that no pain is felt, and the memory of the operation is afterwards often entirely obliterated, though at the time sufficient consciousness is preserved for fairly reliable answers to be given to tests for anæsthesia to pin-prick on the lips, chin, or cheek. These tests are a most valuable guide during the progress of the injection as proof of the correct placing of the needle, and also as to the amount of alcohol necessary to use, as complete anæsthesia of the nerve is to be aimed at.

It is not always necessary to use a general anæsthetic and some patients prefer to do without, and often bear the operation perfectly well under the use of local novocain only, without feeling much pain. Indeed, I have often heard the remark that the pain is much less than that of the neuralgic spasms which they are constantly suffering from. If, however, the patient is nervous, especially if a woman, then a preliminary morphine-hyoscine injection is advisable. Usually ¼ gr. morphine with 1/150 gr. hyoscine suffices, given three-quarters of an hour before commencing the injection. In a few cases a second dose will be required before the proper stage of relaxation and quiet is secured. With persons over the age of 65 I generally use only 1/8 gr. of morphia, as I find that older people more easily slip into a condition of complete unconsciousness, just as if chloroform or ether were used, and then they are totally unable to react to the pin-prick tests, and it becomes a matter of chance whether the nerve is injected properly.

Results.

In slight cases, medicinal treatment by gelsemium and the milder analgesics, with radiant heat or ionisation locally, and complete rest for a time, may give relief, but in severe neuralgic cases all such methods of treatment are altogether vain. Nothing then suffices except nerve blocking, either by alcohol injection or by resection of the nerve. Section of peripheral branches is doomed to failure, and the only open operation that should be undertaken is resection of the posterior sensory root. Alcohol injection of the peripheral foramina, the infraorbital or mental, is occasionally successful, but often fails to relieve for more than a few days. To make certain of success, the nerve trunks must be injected at their deep foramina of exit from the skull, or else the ganglion itself injected, a much more difficult and delicate proceeding.

During the last 23 years I have treated by injection over 1100 cases of trigeminal neuralgia, and with increasing experience I am convinced that one should never fail to inject the nerve at the foramen ovale or rotundum, and thus relieve the pain for at least a year, and often for much longer. Injections of the ganglion may produce light anæsthesia only, or total loss of all sensation. This will not vary after a few days have elapsed since the injection, and in large numbers of my cases I have no doubt the cure is permanent. Cases in which the neuralgia has returned after injection of a nerve trunk, especially if slight anæsthesia persists, are often more difficult to inject than a fresh case, and for this reason I advise injection of the ganglion when possible, if the neuralgia returns within 18 months of the first injection. If repeated injections in the region of the foramen ovale are performed, considerable fibrosis of the tissues in the zygomatic fossa results, with consequent greatly increased difficulty in manipulation of the needle, and ultimately it may even become necessary to resort to surgical operation to resect the posterior root within the cranium.

[1] Neuritis and Neuralgia. Oxf. Med. Pub. 1926.

THE BIRMINGHAM WOMEN'S HOSPITAL.—The combined ordinary income of the Birmingham Women's Hospital and Maternity Hospital last year was £36,581, which fell short of the expenditure by £3695. There were 2565 in-patients at the Women's Hospital, an increase of 164, and the highest number yet reached. With the exception of 21, every one of these patients, who stayed on the average 15·2 days, received operative treatment; their cost per day was 10*s.* 7*d.* At the Maternity Hospital there were 1740 in-patients, a small increase. The rapid development of the work has necessitated the appointment of a resident medical officer.

SOME LESSONS OF THE DISTRIBUTION OF INFECTIOUS DISEASES IN THE ROYAL NAVY.*

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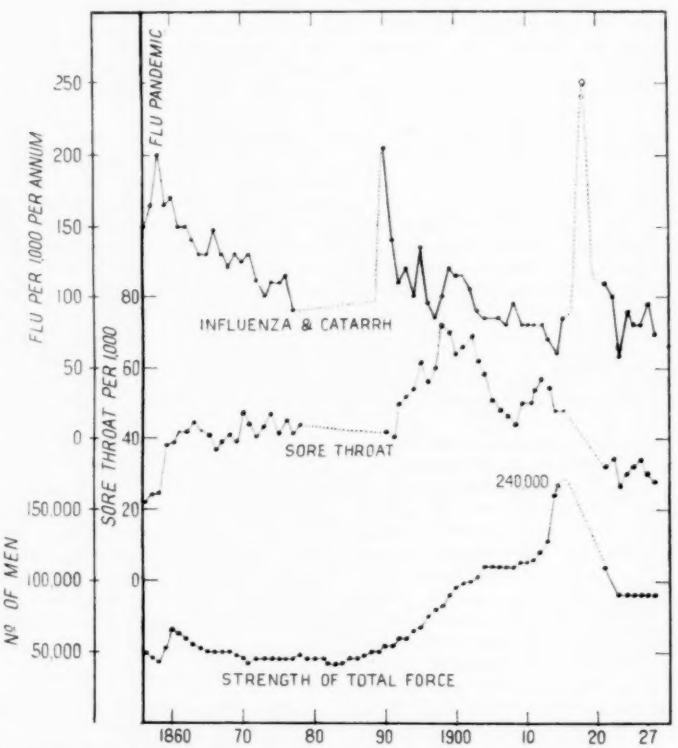
LECTURE II.

TEMPORAL AND GEOGRAPHICAL DISTRIBUTION OF RESPIRATORY INFECTION.

THE incidence of the minor respiratory infections in the Navy is represented in Fig. 5, the upper graph of which records the combined yearly rate for catarrh and influenza in the total naval forces. From 1856 until 1878 catarrh and influenza were entered under one heading, then for the next 12 years all respiratory diseases were entered together and these minor respiratory infections could not be abstracted from the statistical records. The influenza pandemic of 1890 resulted in influenza and catarrh again being separated from the "major" respiratory infections and each given an entry to itself. However, from personal knowledge and perusal of the reports, it is evident that in the Navy the terms catarrh and influenza are often used as synonyms for the same clinical condition, and for this reason they were added together all through the period the graph refers to. Sore-throat and tonsillitis, the "cynanche" of early years, has always been a ship disease, and is an excellent subject for statistical comparisons, because sore-throat practically diagnoses itself, and any conditions with which it might be confused are rare in the naval age-group. The middle graph in Fig. 5 refers to this group of infections.

Taking the top graph first it will be noticed that in the late 'fifties, when influenza was pandemic, the disease reached its maximum in the Navy in the year 1858. In 1890 there is a second peak which is not significantly higher than that of 1858. Complete records have not been issued for the war years, but a rough estimate from the data I have been able to collect suggests that in 1918 the combined morbidity of catarrh and influenza for the total force approached 25 per cent. It is also evident that the influenza of the 'fifties and 'sixties was a much more protracted visitation than that of the 'nineties and 1918. In fact, influenza was prevalent in epidemic form in different parts of the world from 1856 to 1870.

FIG. 5.



Incidence of minor respiratory infections in the Total Force 1856–1927.

SORE-THROAT.

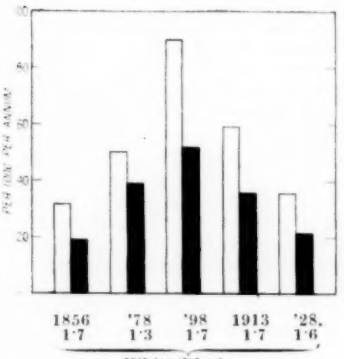
Turning now to the graph of sore-throat incidence, it will first be noticed that there is no parallelism between it and the graph for catarrh and influenza, which suggests these two groups of infection are caused by distinct kinds of biological agents. The morbidity from sore-throat was at a minimum from 1856–58; then, in 1859, it rose rapidly from about 2 to 4 per cent. per annum, where it remained with insignificant fluctuations until the year 1891. In 1892 the rate went up rapidly to reach a maximum of about 7 per cent. in 1898. In 1903 a rapid decline in the incidence of sore-throat commenced and continued till 1909, when a further rise took place before the record was temporarily terminated by the war. When the record is resumed in 1921 the incidence is found to have declined to about 3 per cent. These fluctuations in the prevalence of sore-throats were perplexing, until the strength of the total naval force was plotted out below the sore-throat graph. Each increase in the strength of the Navy means an accompanying acceleration in the rate of recruiting. The growth of the Navy in 1859 and 1860, and again from 1900–04, was in both instances accompanied by a rise in the incidence of sore-throat. Between 1904 and 1908 the rate of recruiting remained constant, and the morbidity from sore-throat declines, only to rise again when recruiting is re-accelerated. After the armistice demobilisation rapidly reduced the naval strength from over 200,000 to a routine complement of 90,000 men, and when accurate statistics were reissued in 1921 the incidence of "sore-throat" was found to have dropped accordingly.

It may seem surprising that accelerations and retardations in the rate of recruiting showed little reflexion in the graph of the incidence of catarrh and

* The Milroy lectures delivered before the Royal College of Physicians of London on Feb. 26th, and March 3rd and 5th.

influenza, because as shown in my first lecture (Fig. 3), the commoner infectious diseases, including catarrh, were, *during the same specific period*, greater in training establishments than in the Navy as a whole. The influence of the rate of recruiting doubtless is a factor of weight in the morbidity of catarrh and influenza, but the irregular incidence and periodicity and variable infectivity of this group mask any changes in the yearly incidence which might be caused by the recruiting factor. In fact, "sore-throat" is obviously less subject to sudden, large, and transitory changes in prevalence than epidemic influenza.

FIG. 6.

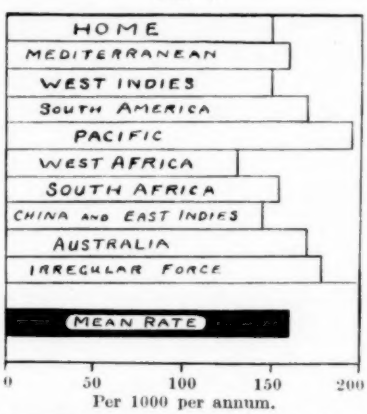


Sore-throats, ratio of morbidity at home (white columns) to morbidity abroad (black columns).

Fig. 6 compares the incidence of sore-throat at home and abroad during six years; those of minimum and maximum incidence, 1856 and 1898, 1878 and 1928, when the recruiting-rate was steady or retarded, and 1913, when the acceleration of the rate of recruiting was high. In each year the incidence on the Home Station was greater than abroad, because the home figures included those of the recruiting establishments. But in each year when the rate went up at home it also went up abroad. What is more, in the years illustrated, with the exception of 1878, the ratio of cases of sore-throat contracted at home to those contracted abroad remained practically constant.

Fig. 6 shows that the increments in the total sore-throat morbidity which accompanied an increase in recruiting cannot be solely attributed to an increase in the number of infections among the freshly added susceptible individuals, but that when a rise in incidence occurred in recruits a coincident rise in the morbidity of sore-throat occurred among trained men distributed throughout the world. It would appear that the influx of fresh susceptibles into the recruiting depôts in some way alters the complex of infecting organisms responsible for sore-throat. Hence, as carriers of new strains of bacteria from the recruiting depôts are drafted to ships all over the world, the sore-throat rate among trained men goes up on every station. The correlation of the rate of recruiting and the morbidity of sore-throat in the Navy presents an interesting analogy with the mortality of mice in experimental mouse-typhoid epidemics where an increase in the rate of recruiting in a mouse community was always followed by a rise in the death-rate among, not only of the newly added susceptible mice, but also the senior experienced mice already in the community.

FIG. 7.

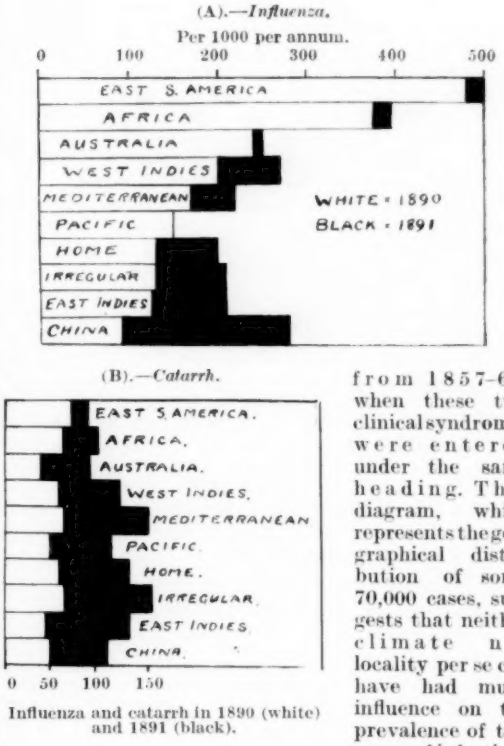


Average incidence of influenza and catarrh from 1857 to 1866 inclusive.

CATARRH AND INFLUENZA.

The distribution of catarrh and influenza in the 10 subdivisions of the Navy of the period is shown in Fig. 7 during 10 years of influenza prevalence from 1857–66, when these two clinical syndromes were entered under the same heading. This diagram, which represents the geographical distribution of some 70,000 cases, suggests that neither climate nor locality per se can have had much influence on the prevalence of this group of infections in the Navy. In contrast to sore-throat, the rate for catarrh and influenza on the Home Station during these years was below the mean rate for the total force.

FIG. 8.



Influenza and catarrh in 1890 (white) and 1891 (black).

During and after the 1890 pandemic, influenza and catarrh were entered separately in the naval returns. The geographical distribution during 1890 and 1891 of influenza and catarrh as separate clinical entities is given in Fig. 8, where the incidence in 1891 is envisaged by the black parts of the columns. The epidemic of 1890 was practically confined to the first quarter of the year. In this connexion it should be noted that there is no definite mention of any epidemic of influenza in the preceding year, 1889. The influenza of 1891 was more evenly distributed throughout the year than that of 1890, but in 1891 the maximum incidence was in the autumn. In Fig. 8 the stations have been arranged from above downwards in the order of the influenza morbidity for 1890. The South American and African squadrons suffered most in 1890, the Home Station was seventh on the list. In the following year (1891) there was a tendency for the morbidity on the different naval stations to vary inversely with the previous

year's attack-rate. The four stations least affected in 1890 were the four most heavily attacked in 1891, and China, with the minimum incidence in 1890, had an attack-rate in 1891 double that of any other station. This phenomenon is not due to the epidemic having lasted from December of one year into January of the next, and may be taken as suggesting that in 1890 outbreaks had some effect in increasing the influenzal herd-immunity for the following year an effect which was proportional to the attack-rate in 1890 (i.e., to the intensity of the antigenic stimulus previously received by the herd). In 1918 more direct evidence was available that one wave of influenza may confer an increment of herd-immunity to a following wave—anyhow on the victims of the previous waves. The attack-rate recorded in April and May in the Grand Fleet (90,000 in 1918) was 20 per cent. and 6 (± 0·04) per cent. in the autumn. Of 10,000 men who were attacked in the spring only 1·9 (± 0·13) per cent. suffered in the autumn, less than a third of the expected morbidity for the second wave. These observations testify that some strains of influenza confer an appreciable degree of herd-immunity which lasts over four months.

Below the influenza diagram in Fig. 8 is one made to the same scale for the geographical distribution of those infections which were described as catarrh in the naval health returns of 1890 and 1891. The stations are arranged in the same order as in the upper diagram. In 1890 there is no obvious correlation between the incidence of catarrh and influenza, but in 1891 the recorded catarrh cases in general were more prevalent than those infections which were labelled "influenza," and there is a tendency for those stations which had high rates for influenza in 1891 to also record high rates for catarrh. Actually, in 1891 the catarrh entries were more numerous than influenza entries. (In 1890, 14·6 per cent. of the Navy is recorded as having influenza and 5·7 per cent. catarrh. In 1891 there were 6·3 of the former infection to 7·0 per cent. of catarrh.)

The differential morbidity of these infections may be to some extent artificial, because although "cold in the head" is usually a synonym for catarrh and implies symptoms of coryza, and although, especially abroad, epidemic influenza is, more often than not, unaccompanied by coryza, and although, *stricto sensu* to my mind, catarrh and influenza are definite clinical entities and usually easily distinguishable, yet catarrh has in the Navy almost a local meaning which includes sporadic influenza. In the years following an influenza pandemic the cases in the returns recorded as catarrh tend to go up at the expense of influenza, because though many subjects entered as catarrh are undoubtedly recognised at the time to be genuine cases of influenza, there is a great tendency for medical officers as a matter of policy to call them catarrh because of the panic and fuss the report that influenza has reappeared in a ship tends to cause.

I think, therefore, the increase in the ratio of catarrh to influenza prevalence reported in 1891 is to some extent caused by this confusion of "naval catarrh" with "naval influenza," after the 1890 pandemic.

During 1890 and 1891 there were exact data for age-grouping those cases returned as influenza. These data are summarised in Table II. Ignoring for a moment the oldest group of men over 45 years of age, although the difference in attack-rates is not great, the numbers are large enough to be practically certain that in 1890 naval men under 25 years old were, on the average, more prone to attack than those over this age. Those who believe in the general application of the latent immunisation hypothesis would say the older men as a group had gained some immunity by their greater past bacterial experience; otherwise, the increase in herd-immunity with age which is shown in the 1890 statistics means that some men grow more immune to certain types of influenza as they get older, irrespective of their bacterial experience. In Table II. only the incidence for the total force is given, but a detailed examination showed that in only one of the ten divisions, into which the Navy of that time was divided, was the

TABLE II.—*Influenza Incidence.*

AGE-GROUPING 1890 AND 1891.

	Age ..	15–25	25–35	35–45	Over 45	All ages.
1890	Number ..	30,020	17,310	5,150	870	53,350
	Rate % ..	16·0 (±·14)	13·6 (±·17)	11·9 (±·31)	13·9 (±·7)	14·8 (±·1)
1891	Number ..	31,780	17,400	5,590	900	55,670
	Rate % ..	6·39 (±·09)	6·64 (±·12)	6·60 (±·22)	10·7 (±·7)	6·56 (±·07)

morbidity among men of 35 to 45 higher than among 15 to 25 age-group. The differences in the attack-rate of these age-groups diverged from the mean incidence to a variable extent on different stations. In the Pacific squadron (the exception alluded to above) there was no significant difference at all; while the South-East Coast of America squadron, although numerically the smallest force in the Navy, showed the highest attack-rate with the most marked age gradient. (There were 330 men under 25, of which 58 (± 1·8) per cent. got influenza, against 32 (± 2·3) per cent. of the 230 men over 25.) This small squadron also illustrated another point. The attack-rate of a ship infected with influenza may vary between 5 and 75 per cent. at different times and places; but if two or more ships are infected at the same time and place, the morbidity in each ship tends to approximate the same figure. The South American squadron consisted of four small ships only, which were all infected in January, 1890, at Montevideo. The attack-rates were 54, 49, 47, and 33 per cent.—all rates which were more than double the average of the whole Navy. On the other hand, if isolation is absolute, a ship will escape infection altogether, as is shown by the following natural experiment.

In 1890 a training squadron of four cruisers in company gave leave at Barbadoes; the crews of these four ships fraternised freely ashore. The squadron left on March 7th. On the 8th a case of influenza reported sick in H.M.S. *Ruby* and, before the ship reached Bermuda on the 28th, 34 per cent. of the ship's company (260 men) of the *Ruby* had contracted the disease. Not a case of influenza occurred in the *Active*, the *Calypso*, and the *Volage*, who were proceeding in company with the *Ruby* to Bermuda.

This is a good demonstration of the efficiency of absolute quarantine in preventing the spread of influenza from ship to ship.

When the age-distribution of the 1891 influenza is examined, it is remarkable that there is no significant difference in the morbidity of the three lower age-groups, such as occurred in the previous year. This contrast between 1890 and 1891 favours an hypothesis originally put forward [8] on a much smaller group of figures. In the dense population, common to all ships, when influenza is epidemic, no one can escape contact with the infecting agents, and the immunity of the subdivisions of the whole herd is approximated to the same level by symptomatic, and symptomless, infection or by the mere absorption of influenza antigens. At the commencement of the first wave of an epidemic of influenza the younger the group, the lower is its herd-immunity. Hence the brunt of the attack falls on the younger groups. These, as a result of this greater antigenic stimulus, receive a greater increment of immunity than that acquired

by the older divisions of the herd. Therefore, when the whole herd is once again exposed to a similar risk of infection, the attack-rates in the various age-groups are found to have become more nearly equal.

Finally, Table II. shows that in 1890 the attack-rate for influenza, after falling with increase in age from 15 to 45, goes up again in the small group of men over 45; and the rate in this group during 1891 was 60 per cent. higher than in the three younger groups. I do not think this rise is necessarily a specific biological attribute of naval old age, but is more probably due to the fact that few ratings remain in the Navy after 45 and therefore at least half the members of this oldest group would be senior officers. The relatively sheltered life of officers in their separate cabins would tend to prevent them acquiring as much latent immunity as ratings during inter-epidemic times. But the officers' more screened existence would be inadequate to protect them from infection during an epidemic of ship influenza.

INFLUENZA IN 1918.

There was some doubt ashore as to whether the lethality of the 1918 influenza was really much greater than that of 1890, therefore the naval evidence on this point should be of general interest. In both the 'fifties and 'nineties there was little rise in the naval respiratory death-rate. In the two years, 1890 and 1891, there were only 16 deaths more than the 152 to be expected from the average death-rates of respiratory disease and influenza before and after the epidemic.

In 1890 the respiratory death-rate was 1·42. In 1891 it was 1·29. The average rate for the ten years 1886 to 1895 was 1·33, therefore in 1890, since the strength of the Navy was 54,000 men, six more deaths from respiratory disease occurred than were to be expected, to these must be added six, directly attributed to influenza, which was not included as a respiratory disease in the naval returns of these years. In 1891, six deaths are attributed directly to influenza but the respiratory death-rate was below the average.

Complete figures for the total force were not available for 1918, but 155 deaths were recorded in the Grand Fleet as due to influenza and pneumonia (mortality 1·72 per 1000). The only other war year for which the data is published was 1915, when there were 56 deaths from influenza or pneumonia in the Grand Fleet (mortality 0·44). Therefore in this division of the Navy the number of pneumonia deaths in 1918 was threefold that reported in 1915. In the South of England and some places abroad the naval influenza epidemic was much more lethal than in the Grand Fleet. H.M.S. *Africa*, the most severely smitten ship I have heard of, within about 10 days recorded 570 cases and 51 men died out of a ship's company of 779—a 9 per cent. case-fatality. This happened at Sierra Leone where she was in company with her sister ship H.M.S. *Britannia*, which reported very similar figures. Therefore in the Navy the 1918–19 influenza was a dangerous lethal infection compared to which that of 1890 and 1891 was a trivial ailment.

MAJOR AND MINOR RESPIRATORY INFECTIONS.

Table III. shows the recent distribution of major and minor respiratory infections in the Navy throughout the world. Taking the total columns first, the Home Station, because it includes the training depôts, has the heaviest incidence of both major and minor respiratory diseases. The Mediterranean, Atlantic, and West Indies have different but by no means trying climates. These stations show the lowest incidence of respiratory disease. While the three other foreign stations illustrated, the ships of which spend a large amount of time in the tropics, return the higher rates for both severe and trivial respiratory illness. The occurrence of respiratory disease among seamen has sometimes been loosely attributed to change of climate from hot to cold, on the assumption that the subject returning to a temperate climate from the tropics gets chilled before he readapts himself to the cooler atmospheric conditions.

In this connexion we may note that, on three of the stations illustrated, the men serve in both tropical and cold climates. From the West Indies the ships visit Canada and North America. The China station includes such places as North-East Coast of Asia and Japan where snow falls in the winter. Africa nowadays includes the Cape as well as the tropical West and East coasts. The only station to-day where the personnel may get no relief from tropical conditions all the year round is the East Indies, and on this station the incidence of major respiratory infections is greater than on any other foreign station.

I do not think, therefore, that change of climate from hot to cold can have much weight in the production of respiratory disease in seamen. In the case of tuberculosis of the lungs it is readily understood how exhausting conditions, such as those in a gunboat up the Persian Gulf, may light up a latent tuberculous focus. Also such conditions may lower individual resistance and permit auto-infection, or fresh infection, of the lungs with pneumococci or other organisms in subjects who would have remained immune from pulmonary symptoms in less trying climates. Table III. shows that the morbidity of the minor and major respiratory disease shows some tendency to be associated. However, the important fact that these figures reveal is that respiratory disease, provided other environmental conditions are held as constant as in the Navy, is practically independent of climate and geography, and that it is possible to find as high or higher attack-rates for pneumonia, tuberculosis, tonsillitis, and colds in the head among sailors in the tropical zone as at Portsmouth or Scapa Flow.

TABLE III.—*Geographical Distribution of Respiratory Infections, 1922–26.*

Station.	Mean strength (in thousands).	Major. Pneumonia.	Tubercle.	Bronchitis.	Pleurisy, &c.	Total.	Minor. Influenza.	Catarrh.	Sore-throat.	Total.
Home	37	3·2	2·3	5·4	5·0	15·9	33·2	71·2	36·5	140·9
Atlantic ..	21	1·3	2·0	3·0	2·8	9·1	24·5	46·6	24·5	95·6
Mediterannean .	18	1·1	2·4	2·7	4·2	10·4	8·3	56·1	23·7	88·1
West Indies ..	2	1·0	1·0	3·8	3·3	9·1	8·1	51·4	19·4	78·9
East Indies ..	2	3·7	2·8	5·0	3·7	15·2	8·1	77·1	30·0	151·2
China	5	2·0	2·5	5·7	4·8	15·0	23·4	85·0	28·1	136·5
Africa	1	2·9	3·3	4·2	3·3	13·7	11·3	65·9	29·9	107·1
Total Force..	90	2·2	2·3	4·2	4·4	13·1	23·6	61·6	29·6	114·8

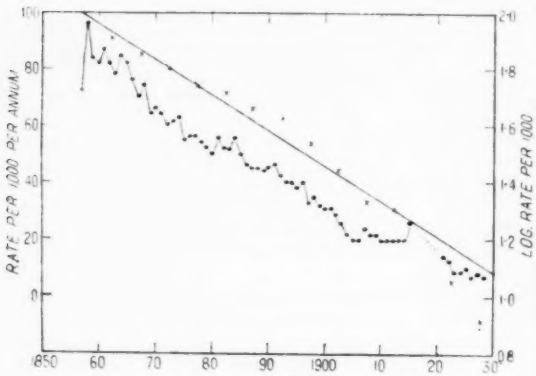
Morbidity per 1000 per annum of mean strength.

Distribution of Rheumatism.

One of the most curious and inexplicable phenomena shown in these naval statistics is the rapid and steady fall of rheumatism since the 'sixties. Fig. 9 is a graph of the yearly incidence in the total naval force of those cases recorded under the heading rheumatism since 1856. The crosses on the diagram are the logarithms of the average rates for five

yearly periods. They fall into a fairly straight line during the pre-war period, which means the rate of decline was fairly constant during this period. After the war the rate is seen to have been accelerated.

FIG. 9.



Rheumatism in Total Force.

These rheumatic figures appear to have been unaffected by the rate of recruiting, the proportion of the Navy serving abroad, and the accompanying incidence of other infections (except undulant fever). Seeing the great importance some authorities attribute to tonsillitis in the ætiology of rheumatism, it is noteworthy that during the time when the incidence of tonsillitis nearly doubled itself between 1890 and 1900, the decline in rheumatic incidence was actually accelerated. At one time I thought that there might be some ætiological connexion between the incidence of rheumatic disease and "fevers" (other than undulant), since the prevalence of the latter group of infections had shown a similar drop in the same period; and, moreover, rheumatism, like fevers, was also a small-ship disease. But if this was so, the geographical distribution of rheumatism ought to show some similarity to that of fevers.

Fig. 10 is a diagram of the incidence of rheumatism between 1887 and 1895 on the ten Naval Stations of that time. Rheumatism was a little more common abroad than at home, which was consistent with the view that this excess in morbidity might be secondary to tropical fevers. But except in the Mediterranean, rheumatic and febrile morbidities show no associations. In Australia for example, although the incidence of rheumatism was higher than in the East Indies and Africa, yet in the same period (1887–95) the incidence of continued fevers in the East Indies (210·6) was sevenfold that recorded on the Australian Station (29·3), and the incidence of malaria in the African squadron (234·2) was over six times as great as in Australia (35·5).

This seems to exclude either continued fevers or malaria from being a factor of any weight in the ætiology of rheumatism. Dysentery, a disease with occasional rheumatic complications, has never been prevalent enough in the Navy to exert an appreciable effect on the rheumatic returns even if such sequelæ were common.

The largest incidence of dysentery for the same period 1887–95 was 33 per 1000 for India, followed by 5·2 for China. The "Irregular" force with the maximum incidence of rheumatism have only a rate of 0·9 per 1000 for dysentery and 56·2 for total fevers, continued and malarial.

The decline in naval rheumatism is very satisfactory but very puzzling; all we can note is that during the whole period the sailors' standard of living, diet, sobriety, and social behaviour has steadily advanced. There is even some flimsy clinical evidence that life in the Royal Navy of to-day actually ameliorates chronic rheumatic pain. Several retired officers, who rejoined the Service for the war, have told me their return to the sea coincided with the disappearance of their rheumatism to which they had been martyrs since their retirement. Is it conceivable some of these subjects were freed of their fibrositis because of, rather than in spite of, their return to active service at sea?

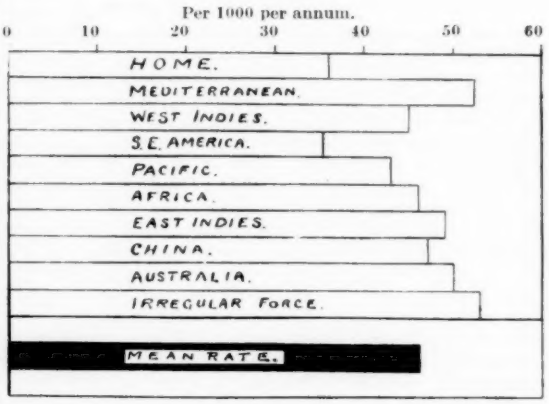
Distribution of "Tropical" Fevers.

Before discussing the distribution of fevers, a few words are necessary concerning the nomenclature used in the Navy for their classification. The infections that it is wished to consider are the so-called tropical fevers, entered in the naval statistics of to-day as malaria, typhoid, paratyphoid, Mediterranean, dengue, and sandfly fevers together with pyrexia of unknown origin (P.U.O.).

Between 1856 and 1869 this group of diseases were classed under two headings, the first "remittent and continued fevers," and the second "intermittent fevers." The latter heading must have mainly consisted of benign tertian and quartan malaria, and a few of the less severe types of subtertian malaria. The other group, labelled "remittent and continued" also included much malaria and all other types of fever from ephemeral fevers of one or two days' duration up to enteric and undulant fever of as many months on the sick list. After 1869 the naval nomenclature was changed. The single heading "remittent and continued" was divided into three: (1) remittent, (2) simple continued, and (3) enteric fever. Intermittent fever was now termed "ague." Ten years later, in 1879, the fever nomenclature was again revised. Remittent fever and ague were combined as "paroxysmal fever" which in 1886 was called "malaria." "Continued fever" and "enteric" remained as headings up to the war except subsequently "continued fever" became P.U.O.

The only other noteworthy change in classification was the award of a separate heading to Mediterranean fever in 1897. Before this date undulant fever seems generally to have been included in the remittent, paroxysmal, and malarial fevers of the different eras. This is rather important, as one would rather have expected it to be classed as a continued fever, and doubtless many milder cases were. The "continued fever" group of the naval statistics was, however, a kind of pigeon-hole which seems to have been used for any fever which had not obvious, malarial, enteric, or undulant characters. Several times in the naval reports a purist medical officer would ask why should an ephemeral fever of less than a week's duration be classed as continued, but, as a matter of fact, the

FIG. 10.



Geographical distribution of rheumatism 1887–95.

word had come to have much the same diagnostic implication as our modern P.U.O. In the earlier years such fevers as dengue and sandfly must generally have been classed as continued fevers, but sometimes they may have got out of the fever group altogether and been included with influenza and catarrh. Even as late as 1907 I remember returning cases which I am now convinced were sandfly fever as influenza. Apropos of such an error there is a natural experiment, related in the report of 1889, which records a small epidemic which was probably sandfly fever but is called influenza.

At Nauplia, one of the Greek Islands, as is common practice in the Navy when in out of the way places, 35 men landed from their ship for a picnic. Fifteen men returned to the ship before sunset, the remainder did not come off till after dark. The latter 20 men without exception got a fever which was recorded as influenza. The disease, however, puzzled the medical officer in that it spread to no one else in the ship, an event unheard of in real influenza. In the light of present-day knowledge the puzzle is easily solved by the habits of the sandfly which does not attack its prey till after sunset, and thus explains the escape of the 15 members of the picnic party who came off early and the failure of the fever to spread in the ship.

The falsification of the fever records by the minor fevers getting classed as influenza is probably balanced to some extent by the reverse process, because in the earlier years of the records one finds what appear to be typical explosive outbreaks of mild influenza in ships called "ephemeral fever" and classified as "continued fever." Besides the difficulty in nomenclature and diagnosis, great caution has to be exercised in drawing general conclusions from the total yearly incidence of fever in the whole Navy or on a single station. The incidence of fevers in ships show what may be called an "all or none effect" to a greater extent than the infections we have previously discussed, and an epidemic limited to a single ship may produce a large rise in the total incidence on a station or even of the whole Navy. The incidence and kind of fever depends far more on the geographical position of a ship than do any of the other common infections heretofore discussed.

For example in the years 1872 and 1873 the incidence of ague in the Mediterranean suddenly increased nearly threefold and then dropped back to its average level. Examination of the detailed returns showed that the greater part of this increase in malaria morbidity was due to the employment of one small gunboat with a company of only 55 men up the Danube for these two years. As a result, this ship returns 109 out of the total 223 cases of ague recorded in the whole Fleet. The incidence of malaria in this small gunboat was 50 times that in the rest of the Mediterranean Fleet (3100 men).

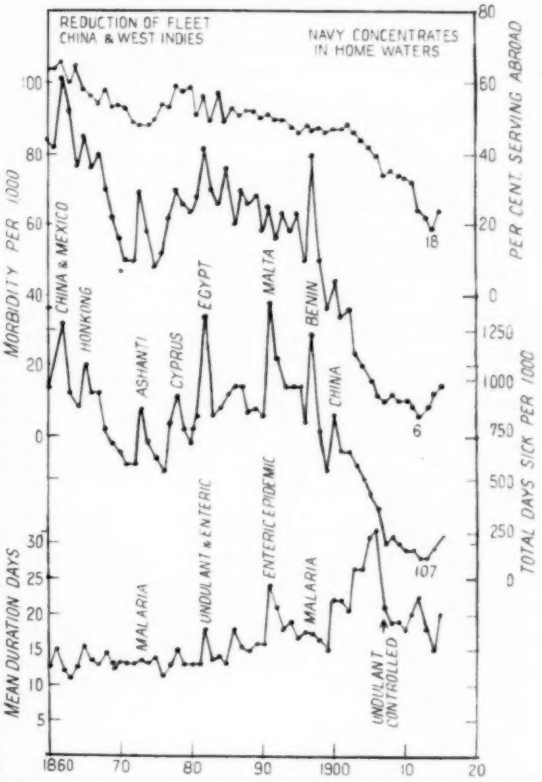
ENTERIC INFECTIONS.

Enteric fever is a disease which is usually contracted ashore and rarely shows much tendency to spread in a ship. As a rule, therefore, the enteric fever cases are fairly evenly distributed throughout the Navy in space and time.

Considering the density of the population, it is surprising how rarely intestinal infections do become epidemic in ships, and this is perhaps largely due to the ships natural conservancy system. The seagoing population from time immemorial has used that method which we are told is the hygienic ideal—namely, the removal of all excreta from the environment by passing it straight overboard, without its getting a chance of soiling anybody or anything. Occasionally, however, owing to food contamination by a carrier, or to other accident, enteric fever spreads in the ship itself, and a single ship produces a morbidity which may have a marked effect on the total figures of a station or even the whole Navy.

The largest discovered attack-rate for undoubted enteric fever, limited to one ship, took place at Phalerum in 1897 in H.M.S. *Forte*. Twenty-three per cent. of her complement (240 men) got typical typhoid fever. This single ship epidemic trebled the enteric-rate in the Mediterranean Fleet (from 3·3 per 1000 in 1896 to 10·2 in 1897). In 1924 history repeated itself in the *Royal Sovereign*. An accidental disobedience of the regulations allowed infected lettuce from a dangerous locality to get on board. As a result, she reported 67 out of the total 77 cases of enteric fever recorded that year for the whole Navy. Thus a mistake in the hygienic control of one ship was the cause of the Atlantic Fleet having a typhoid morbidity 20 times greater than the previous three years average, and trebled the expected

FIG. 11.



Fevers (Total Force) 1860–1915. The top graph (scale on right) shows the percentage of men serving abroad; the second (scale on left) the morbidity per 1000; the third (scale on right) the total days of sickness per 1000; and the fourth (scale on left) the mean duration of sickness in days.

incidence of enteric fever for the total Navy. (Total force 90,000, enteric-rate 1921–31 0·28, and in 1924 0·87).

INCIDENCE OF FEVERS.

Bearing these remarks in mind, we may now examine Fig. 11 with advantage. The incidence of fevers, of course, must largely depend on the relative number of men serving abroad. The topmost graph shows the percentage of the total force on foreign service. The graph immediately below this is the attack-rate per 1000 for "fevers." During the earliest period in the 'fifties and 'sixties, the number of men serving abroad was reduced from about 65 to 50 per cent. of the total force, and the decline in fever dropped in much the same proportion. The number of men serving abroad and at home then remained almost equal till the beginning of the present century when the Navy started to concentrate in Home waters. Just before the outbreak

of war 75 per cent. of the total force was at home. The fever morbidity shows a sixfold decline from about 60 to 10 cases per 1000 per annum, although the proportion of men on foreign service had only been halved. Moreover, the fever decline had definitely commenced before the increase in home service, therefore other favourable influences were at work besides the concentration of the fleet at home. The next graph shows the total days' sickness from fevers, or quantity of illness irrespective of number of separate infections. This graph tends to rise in the middle period as the incidence curve above tends to fall, indicating that the average number of days a case of fever was on the list had gone up, as is confirmed by the bottom graph which gives the mean duration of a case of fever. The lengthened duration was chiefly due to the increase in enteric and undulant fever, relative to other fevers, which occurred between the 'seventies and 'nineties. In 1900 both the incidence and amount of fever (the middle two graphs) started a continuous and rapid fall, at the same time the bottom graph rapidly rises. This decline is largely secondary to two causes, big ships tended to supplant small ones and fewer ships were employed in such places as the African rivers, thus the proportion of men at risk from insect-borne disease while abroad had decreased at a greater rate than the mere number of men on foreign service. Secondly, the ætiology of malaria now being understood, some fall in the incidence may be attributed to rational efforts at prevention. Advice on malarial prophylaxis, having regard to the part played by mosquitoes, was first given in the report on the Health of the Navy for 1900. In 1906 a sudden striking fall took place in the mean length of total fevers due to the control of that most protracted disease, undulant fever.

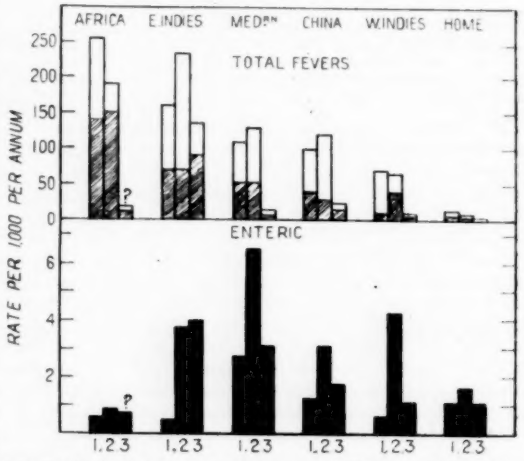
Before leaving Fig. 11 we may note how the peaks on these morbidity charts tell the history of naval operations during the period. These peaks are generally best marked on the graph of total days' sickness because whenever the Navy goes ashore enteric fever usually increases out of proportion to other fevers. Two notable exceptions are the Benin and Ashanti expeditions represented by large peaks on the incidence graph with no corresponding peak on the graph of the average duration of illness. These were West African expeditions. In this region, one of the worst places in the world for malaria, enteric fever has rarely given much trouble to the Navy, even when landed on punitive expeditions.

CAUSES OF IMPROVEMENT.

A graph such as Fig. 11 is often shown as an example of the wonderful effects of modern preventive medicine. I may be unduly pessimistic, but it appears that most of the tenfold fall in morbidity of total fevers, from about 10 to 1 per cent. of naval strength per annum, with the exception of the small decrease due to the irradication of undulant fever, is due to other causes than to methods deliberately undertaken to prevent disease; and chief among these was the diminution in the number of men at risk, secondary to: (1) less foreign service; (2) an increase in the average size of ships preventing a greater proportion of men on foreign service being exposed to infection in dangerous localities.

The geographical distribution of fevers is examined in Fig. 12 which visualises the incidence of total fevers, and enteric fever in the Home and five foreign stations in the early 'seventies, early 'nineties, and the five years prior to the war. In the top set of diagrams the fraction of morbidity due to malaria (ague plus the remittent fever of the 'seventies) has been shown shaded. Africa has always, till recent times, been the worst naval station for malaria, India for fevers other than malaria, though a good second for the latter complaint. There is not much difference on the whole in the incidence or geographical distribution of total fevers in the first and second periods. In the third and most recent period all fevers have shown a satisfactory decline, except in India. With regard to this notable exception, the East Indies is the only station where modern conditions approximate those of the old Navy, and a fleet of small vessels is employed doing boat work, cutting out slave dhows and gun-runners from pestilential creeks and rivers. In Africa it is questionable if the modern period is fairly comparable to the earlier ones, since there was then only in existence a Cape of Good Hope station, which undertook no river

FIG. 12.



Geographical distribution of fevers. Shaded = malaria (ague and remittent). White = continued fever (P.U.O., &c.). Black = enteric (different scale). 1. = 1870–74. 2. = 1890–94. 3. = 1909–13.

work or expeditions such as those which accounted for the African fevers of the 'seventies and 'nineties.

Now let us examine the enteric incidence which is drawn to a scale 40 times that used for the total fevers. The generally low incidence of enteric fever during the first period may be somewhat artificial, because enteric was only given a separate heading in 1869 and in the early 'seventies this infection was, perhaps, still sometimes entered under continued fever; but, on the other hand, the case-fatality, 22 per cent., for this period is not much higher than that to be expected if the standard for diagnosis was the same as in the most recent period. If the low recorded incidence in the earliest period represents fact I should attribute it to there then having been less leave facilities in big seaports where enteric, in peace time, is usually contracted. Malaria, on the other hand, relative to enteric is more often picked up by naval ratings while on duty in uncivilised native districts. Other noticeable points in this diagram are the relatively high incidence of enteric fever on the Home Station, the low incidence in Africa, and the fall in enteric morbidity on the other foreign stations, again with the notable exception of the East Indies. Public health experts say enteric fever incidence is the best index of sanitary efficiency. If so, the figures taken as a whole, especially those for the Home Station, suggest that there has been little change in the sanitary efficiency of ships them-

selves during the last 50 years. As a matter of fact, scrupulous cleanliness has always been the pride of the Navy since the earliest days, and since the cholera outbreaks in the 'sixties purity of the water-supply has received unremitting attention. These facts, combined with that method of refuse and sewage disposal which one might say has always been a specific attribute of the seafarers' habitat, have made the separation of human egesta and ingesta probably more nearly perfect in the men-o'-war of the *whole* period than in almost any other type of modern environment. If naval sanitation afloat has all the time approached perfection we cannot attribute the fall in morbidity to its improvement.

Indigenous Malaria in England.

A question of great local interest has always been: is there an endemic centre for malaria in the Medway estuary? In certain years it is noticeable there was a large number of cases of intermittent fever reported on the Home Station. For example, in each of the naval reports from 1857 to 1860 the Medway estuary is referred to as the only dangerous locality for fever in England. The following quotation is from the report for 1860.

> "There were 324 cases of an aguish character, this form of fever was most common in vessels stationed in the Medway especially at Sheerness; in fact a third of the total number of cases occurred in these vessels, the *Formidable*, the *Monarch*, and the *Cumberland*, the Flag and Guard Ships permanently stationed at that port."

On looking up the complements of these ships, it is calculated at least 8 per cent. of their inhabitants got "ague" while in Sheerness. However, it must be realised that during this period some 5000 men had returned home from China wars, and many, if not the majority, of the infections reported on the Home Station were relapses in these men, many of whom had contracted malaria in China. Nevertheless, the records of the time recognise this and specifically state that the intermittent fever cases reported from Portsmouth, and places other than the Medway estuary, were accounted for by relapses in men recently returned from foreign service. There seems little doubt that from 1857–60 cases of indigenous malaria were common in Sheerness. The establishment of this English endemic centre for malaria was apparently only temporary, depending on a plentiful supply of malaria carriers from the Far East, because in 1862 we find a medical officer saying he had seen no typical intermittent fever in the Medway estuary, and that therefore the cases alleged to have occurred there in previous years were probably not true intermittent fever, but due to mistaken diagnosis. This is the easiest and most satisfactory way of explaining away any observation which does not fit one's own experience—I am not guiltless of employing it myself. Nevertheless, we know that malaria was reported in men who had never been out of England from the same district during the Great War. At this time many sailors returned from the eastern theatre of the war with malarial gametocytes in their blood, and mixed freely with recruits who had never been out of England; and the summers were warm enough to permit the anopheline mosquitoes which abound in the Sheerness marshes to transmit the benign tertian parasite. Again, as in 1860, this endemic centre under modern conditions was unable to maintain itself for more than a year or so, since in recent years there have been no undoubted indigenous malaria cases reported in the Navy from the Medway estuary.

It is stated that there was a recrudescence of "ague" among the civilians of Sheerness in 1874, many of whom had lived for years in Sheerness immune from this disease. It is significant that this year corresponds to the return of the Ashanti expedition which, as we saw in Fig. 11, was responsible for one of the highest peaks on the fever incidence graph. There is, however, no marked increase in the naval malaria incidence on the Home Station for this year. After the Benin expedition in 1897, when the diagnosis of malaria was pretty accurate, home malaria goes up to 6·2 from 2·2, the average rate per 1000 of the previous ten years, but there is no reference in the naval report to malarial morbidity in the Medway estuary.

There seems no doubt that under favourable conditions, such as a hot prolonged summer, a plentiful supply of anophelines, the return of malaria-infested troops from a foreign campaign can establish a temporary endemic malaria centre in certain parts of England. How far this mechanism has been responsible for the English intermittents of historical times is an interesting speculation.

Some General Conclusions.

I will conclude this lecture with a summary of the chief lessons learnt from this study of the distribution of infectious disease in the Royal Navy. One must remember we have been dealing with a selected, specialised, and semi-isolated community, living in an exceptional environment, and that therefore the utmost caution is necessary in accepting any conclusions to which these naval figures point as being of general application. Naval morbidity has undergone a threefold reduction within 70 years. Part of this reduction is due to alterations in the geographical distribution of the Fleet, to a greater use of larger ships, and to a decline in the rate of recruiting, as well as to hygienic improvements and deliberate prophylactic procedures in the Navy itself. Again, an unknown fraction of the improvement in the health of the Navy is secondary to the parallel improvement in conditions ashore; because all infection in ships is originally derived from the shore and therefore the naval morbidity must also depend to some extent on the quality and quantity of infection among the civilian population. Moreover, the incidence of disease in the Navy during any period is not only a function of the morbidity ashore during that period, but also depends on the conditions ashore during the 15–20 years which each member of the naval population spends in the outside world before joining the service. In regard to this point the question arises, has the general drop in morbidity ashore been in any way proportionate to the decline in naval incidence of non-tropical diseases? Morbidity figures ashore are hard to come by. From Glover's [9] discussion in last year's Milroy lectures it would seem that the incidence of rheumatism in England, especially acute rheumatism, has shown a marked decline since 1850, but a decline which is not commensurate with the sixfold drop in the naval rheumatic incidence. All things considered, I think it is fair to attribute some of the decrease in the total naval morbidity to deliberate improvements in the naval environment, and if so, the whole fall in naval non-tropical disease is not merely part of a general phenomenon.

One important lesson this naval study teaches is, that, under conditions of maximum population density, the incidence of droplet-borne disease need be no higher than among a similar age-group living in far more spacious surroundings. And I think this observation illustrates a principle of wide application—namely, that density, other factors being equal, is not necessarily associated with an increase in clinical infection even should it be constantly associated with increased latent infection. For

example, if a long enough period is taken, it is found that in recent times the rural morbidities of many infectious diseases may be higher than the urban.

An unexpected discovery was that during the last 70 years there had been no reduction in the mean duration of any common infection (except syphilis). Thus modern treatment can have had no significant effect in curtailing the time required for individual infections to run their course. There is no obvious reason for not believing that this observation would be found to be universal, if statistical data as complete and reliable as that for the Navy were available for other environments.

The lack of any significant variation in the geographical distribution of respiratory disease in the Navy was rather unexpected. This phenomenon could be a specific character of the naval community, which results from its keeping the same immediate environment wherever it goes. Moreover, every time a ship commissions at a home port for foreign service (for two or three years) she embarks a fresh stock of home-grown bacteria. On the other hand, Europeans abroad live most their lives away from home and in general occupy far more spacious and better-ventilated quarters than they would in England, and also the number and closeness of their contacts with their fellow men is almost negligible as compared with the naval community. Hence the impression of most tropical practitioners that respiratory infections are comparatively uncommon among Europeans dwelling in the tropics may be correct. Nevertheless, impressions are treacherous and there is much evidence that in the densely populated native towns of the tropics, respiratory disease is as rife as in Europe. For example, Rogers [10] shows by comparing a series of post-mortem examinations in Calcutta and London that respiratory disease was a more common cause of death in the Indian than English sample. But these figures do not differentiate between natives and Europeans; also mortality is not always directly proportional to morbidity. Whether naval respiratory disease in the tropics is caused by English bacteria indigenous to the ship itself, or by organisms introduced from the immediate port of call, the one thing which strikes the observant naval surgeon when first he goes abroad in a big ship, after doing an intensive course in strange tropical diseases, is that he does not see them; and each morning he finds, awaiting him in the sick bay, a very similar collection of ailments whether his ship is lying in Hong-Kong, Trinidad, or Portsmouth harbour.

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THE MIDDLESEX HOSPITAL NURSES' HOME.—Last week Prince Arthur of Connaught unveiled a tablet in the main entrance hall of the new home of the nursing staff in Foley-street, W., "as a record of their admiration for the public spirit and generosity which prompted such a noble gift." Prince Arthur said that the building, which has cost £300,000, "is, for the moment, and perhaps for all time, the finest institution of its kind in the world," with "an almost extravagant allowance of bathrooms, hot points, hair-drying machines, and its own hair-dressing saloon." Also there are swimming baths, badminton and tennis courts, and smoking-rooms. "It would," he added, "have been utterly beyond the power, or even the right, of any hospital to provide on such a splendid scale for the comfort, the well-being, and the happiness of the nurses."

OBSERVATIONS ON SKIN ERUPTIONS FOLLOWING VACCINATION.

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LATE ASSISTANT MEDICAL OFFICER, SMALL-POX HOSPITALS, METROPOLITAN ASYLUMS BOARD.

VACCINATION is in many instances followed by skin eruptions which may vary considerably, both in the character of the individual lesions and in their number and distribution. Nowadays a large number of people are primarily vaccinated only when they are directly exposed to small-pox infection, as for example when a member of their family contracts the disease. It is comparatively common for the medical attendant to be asked to see a successfully vaccinated patient who has developed an eruption about 14 days after the appearance of the rash in the primary case. In these circumstances there is often much difficulty in deciding whether the eruption is vaccinal, or whether it is a rash of small-pox modified by vaccination.

Accidental vaccination lesions may appear either in the neighbourhood of the original vaccination site, or in any other situation on the body, as a result of the introduction of the virus into a wound or abrasion. In this way a mother may be inoculated from the vaccinal pustule of her child, or the child may reinoculate itself. There is a greater tendency for this to occur when there is pre-existing skin disease, such as impetigo. Auto-inoculation is not, however, common and should not take place if proper precautions are taken to protect the vaccinated area. Lesions of accidental vaccinia may be distinguished from the focal rash of small-pox by their distribution and their number, but it must be remembered that the inoculation lesions not infrequently met with in small-pox are very similar in appearance. Patients—especially those who are small-pox contacts—displaying such pocks should be kept under observation for a few days and carefully examined for the presence of a generalised small-pox rash.

It is important to bear in mind that vaccination performed early in the period of incubation, even if carried out too late to prevent the patient from contracting small-pox, may yet have the effect of modifying the rash very considerably, thereby causing the lesions to be few, atypical and difficult of recognition. The inflammatory reaction round the place of vaccination often causes an aggregation of small-pox papules in this situation and, when the rash elsewhere on the body is meagre, it may pass unnoticed and the true nature of the condition be overlooked. On the other hand, though vaccination has not been successful, the irritation caused by the scarification may be sufficient to attract a number of small-pox lesions round the site, giving rise to an appearance somewhat resembling that of a successful vaccination.

A local erythema is an almost constant accompaniment of vaccination and, although generally confined to a small zone round the seat of inoculation may, if the reaction be excessive, increase in size until a large portion of the arm is affected. Sometimes when adhesive strapping is employed, the skin beneath it gets irritated and secondarily infected, and a number of superficial pustules appear at these points.

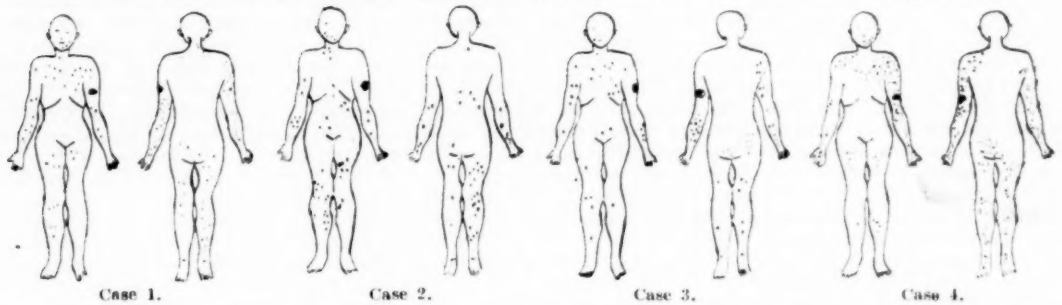
A punctiform erythema which sometimes develops round the site of vaccination is described in the report of the Committee on Vaccination. This erythema embraces a portion of the affected arm, the whole

arm, or the arm, chest, and axilla on one side of the body. This type of rash is caused by the irritation of the strapping which is used to keep the dressing in place, and ceases to appear when bandages are substituted. If strapping is applied to the unvaccinated arm and a bandage is used on the vaccinated arm, the rash only appears in the former case. Rashes met with on the ninth and tenth days of vaccination were of three types—a papulovesicular, an erythematous, and a serum type. In the first variety the lesions commenced as papules and passed through a vesicular stage before scabbing, but many of them aborted in the papular stage. Rashes in the second group varied from punctate erythemata to those consisting of maculæ with small subcuticular hæmorrhages. This rash was usually confined to the vaccinated arm, but in two cases the distribution and appearance were suggestive of small-pox. In these two cases the rash was limited to the axillæ, forearms, thighs, buttocks, perineum, groins, and lower part of the abdomen. In one of them the rash was finely punctate and purpuric, whilst the other was morbilliform, becoming purpuric later. The serum type of rash resembled that which sometimes appears after the administration of antitoxin, the lesions preponderating on the vaccinated arm.[1]

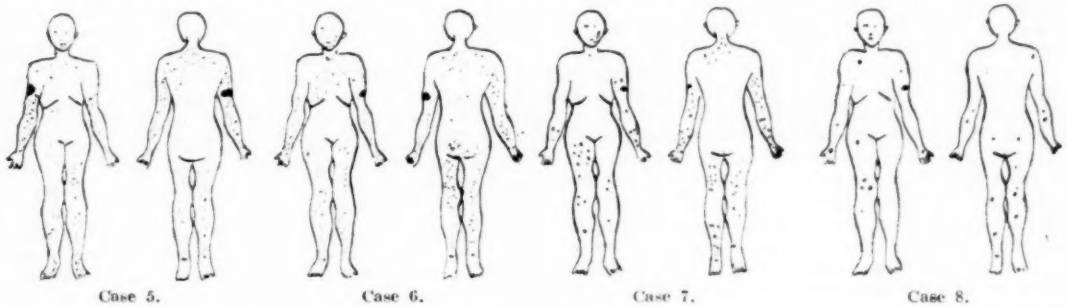
Ricketts[2] excluded "accidental and unspecific" eruptions, and generalised erythematous rashes "doubtless caused by the circulation in the blood stream of the secondary products of inflammation absorbed from the vaccine pustule." He divided generalised eruptions composed of distinct elements into two groups. In the first group the rash consisted of small superficial papules (vaccinal lichen), or of minute vesicles, or a mixture of both. These he considered were not due to a generalisation of the vaccine virus, but were probably toxæmic. They generally occurred in children, the lesions being small and superficial and the distribution not that of small-pox. Rashes of the second group were composed of small papules, superficial in position and having vesicular or pustular heads. They more closely resembled the lesions of modified small-pox than those of the previous group. The rash was sparse, and all the lesions were superficial, as opposed to modified small-pox in which some will be situated in the deeper layers of the skin. Of vaccinal eruptions in which the lesions are larger and even more akin to those of small-pox Ricketts had had no experience. He considered them to be of the utmost rarity, though he had no reason to question the possibility of their occurrence. He found the rashes in both groups more apt to affect the trunk than the limbs, a distribution more suggestive of chicken-pox than of small-pox.

Robertson[3] states that cases are recorded in which a generalised vaccinia appeared as a result of the child's sucking the vaccine pustules on the arm of another child. Ker[4] describes a generalised papular eruption appearing between the fourth and tenth days after vaccination and coming out in crops, in which the papules pass through vesicular and pustular stages; the eruption is consequently heterogeneous and all stages of development may be noted in the same patient at the same time.

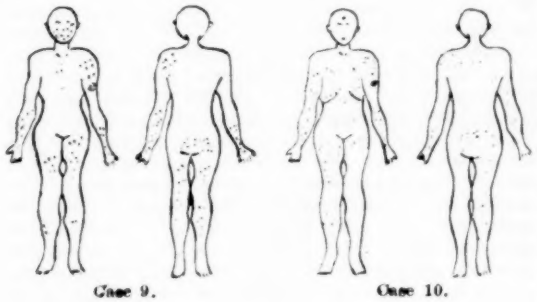
CHARTS SHOWING THE DISTRIBUTION OF THE RASH AND THE SITE OF VACCINATION IN TEN CASES.



Case 1. Case 2. Case 3. Case 4.



Case 5. Case 6. Case 7. Case 8.



Case 9. Case 10.

It is not unreasonable to assume that the introduction of vaccine lymph into the body may be followed by a serum rash in the same way that the administration of antitoxic and other sera is often succeeded by such a rash. Serum rashes are usually classified as erythematous, scarlatiniform, morbilliform, and urticarial, a description coinciding with that of many of the rashes appearing after vaccination. By far the greater number of post-vaccinal rashes are accidental, and are either in the nature of serum rashes or are due to the absorption of toxic products from the vaccinal pustule. Other symptoms of serum disease are not often encountered, and there is no evidence to show that the introduction of a small quantity of serum into the system during the operation of vaccination acts as a sensitising dose, indeed, post-vaccinal rashes of any type are rare among revaccinated subjects.

Generalised Vaccinia.

Specific eruptions—i.e., those composed of distinct elements—are rarely seen, whilst a generalised vaccinia is a still rarer condition, and medical literature contains little account of it. In prevaccination days, inoculation of small-pox was widely practised as a preventive measure, and was often followed by a focal rash of small-pox. Inoculation with the virus of cow-pox persisted for some time after the introduction of vaccination and was made illegal by the Vaccination Act of 1840. There is a possibility that many of the cases of generalised vaccinia recorded were really eruptions of small-pox. Woodville,[5] in 1799, reported a number of cases in which a general pustular rash appeared after vaccination performed for the most part at the small-pox hospital. Lymph from such patients was sent out as cow-pox, and was often followed by an apparently variolous rash. Jenner,[6] in regard to this occurrence, stated, "Where variolous pustules have occurred I believe variolous matter to have occasioned them." Lymph obtained by him from one subject was found to contain both vaccinia and variola simultaneously. A generalised vaccinia can occur as a result of the introduction of the virus into abrasions or septic areas on the skin, either from contamination of the clothing with the matter from the pustule or by scratching. The number and situation of the secondary lesions so produced will therefore depend on the number and situation of the sites at which auto-inoculation takes place, and the presence of an old skin eruption or of recent wounds will afford a clue to the real cause of the condition. If, however, there is reasonable personal cleanliness, and the protective dressing is adequate and frequently changed, there is little risk of secondary vaccinia, and even when a skin disease is present it should not be considered a contra-indication to vaccination during a small-pox epidemic.

It is difficult to estimate the frequency with which post-vaccinal rashes occur. Rolleston[7] quotes the following figures to show the rarity of generalised vaccinia. Chauveau in France noted six to eight cases among 500,000 to 600,000 vaccinated; Hastud described four cases occurring in Denmark between 1888 and 1898 out of 39,915 vaccinations; Vogt found five in 100,000 vaccinations in Germany.

Pearson,[8] writing in 1799, mentions that, with two or three exceptions, lymph distributed to 200 practitioners gave rise to no general eruption. Inquiry among a number of public vaccinators of many years' experience elicits the information that general rashes following vaccination are seldom met with, while no record can be obtained from them of a single case of generalised vaccinia.

Fourteen cases in which vaccination was followed by a general rash were examined during the six months April to September, 1930, in a metropolitan borough. Approximately 1600 persons were vaccinated during this period. All the patients were brought under notice either because they were notified as suffering from small-pox or were discovered during the routine examination of small-pox contacts, the only exception being one case met with in a non-small-pox contact and reported by a public vaccinator. In every instance vaccination was primary, performed with Government lymph, with one insertion. The average age of the patients was 5½ years, ranging from 2 to 14 years. Ten of the children had been definitely exposed to small-pox infection; two of them had no history of such exposure, while the remaining two were doubtful. Six of the patients presented an eruption which was maculo-papular on the first day of efflorescence but became somewhat morbilliform in 24 to 48 hours. In certain of these patients the rash was accompanied by a varying number of urticarial blebs. Three children showed rashes composed of small, rather indefinite papules and macules somewhat similar to those of rubella, which disappeared in the course of a few days. In the severer types of rash small crusts appeared on many of the papules after the lapse of three or four days. A rash of vaccinal lichen was encountered on one occasion; it consisted of 20 or 30 scattered papules, each surmounted by a crust. A further crop appeared, but there was neither pruritus nor erythema. Pruritus was rarely met, even in the more profuse eruptions, and in no case did the papules progress through vesicular and pustular stages. Every eruption was distributed in a manner more suggestive of small-pox than of chicken-pox, in so far as the lesions favoured the limbs rather than the trunk; the face however usually escaped, or was only affected to a slight extent. The immunity enjoyed by the face was in itself almost sufficient to rule out the possibility of the eruption being variolous. On the buttocks and thighs the rash was often present in excessive amount, a frequent feature in small-pox eruptions in young children. Although the distribution was in some ways akin to that of variola, the individual lesions displayed a noticeable indifference to points of pressure and areas of irritation; prominences and exposed surfaces were not picked out at the expense of hollows and protected situations. The irritation of the vaccination did not even cause an aggregation of papules in its vicinity; on the contrary, this region was always free from eruption, although it often blended with the perivaccinal zone of erythema at its margins. In about half the patients the rash was in greater evidence on the vaccinated arm during its early stages, but by the second or third day this excess was much less noticeable. As distinct from modified small-pox, the individual elements of these rashes were uniformly superficial, and though in many cases the rash bore a certain resemblance to that of modified small-pox, the large irregular macules and the urticarial wheals so often met with on the second and third days of the eruption could in no way be mistaken for that disease, however modified its form. There did not appear to be any definite relationship between the severity of the local reaction and the quantity of the rash. The absence of constitutional disturbance both before and after the appearance of the rash was a constant feature in these cases, but this, during the present small-pox epidemic, is a circumstance to which too much weight should not be attached.

The rash most often appeared on the eleventh day—i.e., at about the time when the vaccinal reaction is at its height and desiccation is about to commence. The earliest day on which it appeared was the ninth, and the latest the thirteenth after vaccination.

One case in which the rash was confined to the vaccinated arm deserves mention.

The patient, a female of 20, primarily vaccinated 12 days previously, showed some local œdema and hyperæmia, with a few small pustules round the vaccine pustule. These were probably due to mild secondary infection of the raw surfaces beneath the adhesive strapping. The axillary glands were enlarged and tender and there was a good deal of discomfort in the arm. Above and below the zone of erythema were a number of circular macules about one-tenth of an inch in diameter, extending upwards as far as the anterior axillary fold and downwards to the wrist. On the following day many of these had become definite papules, but the rest of the body remained unaffected. The papules did not mature and at the end of a week had entirely disappeared.

It has to be remembered that a much modified small-pox rash may coexist with a post-vaccinal one, and it may in these circumstances be almost impossible to arrive at a correct diagnosis of the condition.

Case 10 illustrates this. The child had a fairly profuse eruption on the arms, legs, upper part of back, shoulders, buttocks, and groins, with only one lesion on the face. The rash was composed for the most part of small, superficial papules, though some of them were deeper and suggestive of small-pox. On the thighs and buttocks the papules were generally smaller, and were surmounted by crusts. In this region there were also a few patches of erythema, the general appearance here being non-variolous. Apart from the extreme paucity of rash on the face, the distribution favoured small-pox, especially in the tendency of the outcrop to favour prominences. There was no excess of rash on the vaccinated arm, and the local reaction was of but moderate severity. In view of the possibility that some of the papules were variolous, the child was sent to hospital as a case of small-pox. After discharge the boy was re-examined, and it was found that, apart from one or two small areas on the buttocks, there was neither pigmentation nor pitting to mark the site of the rash.

It is not certain to what extent the use of a certain batch of lymph is followed by general rashes. The appended Table gives the number of cases occurring in each family and the number of people in that family who were vaccinated at the same time.

Family No.	No. of cases of rash	No. of persons in family successfully vaccinated at the same time.	Family No.	No. of cases of rash	No. of persons in family successfully vaccinated at the same time.
1 ..	1	7	7 ..	1	3
2 ..	1	7	8 ..	1	1
3 ..	1	6	9 ..	1	1
4 ..	1	5	10 ..	2	6
5 ..	1	4	11 ..	3	5
6 ..	1	4			

More than one of the families mentioned above may have been vaccinated with lymph from the same batch, but as far as can be ascertained this was not the case, though definite information was not available. It will be seen that though in some cases one person only was attacked out of seven vaccinated, in others two out of six and three out of five were affected. In considering this matter the two factors: excessive susceptibility of certain individuals and increased toxicity of certain batches of lymph, have to be thought of; it is probable that the latter cause seldom operates.

DIFFERENTIAL DIAGNOSIS.

In the examination of recently vaccinated persons who have general eruptions the possibility that the disease may be modified small-pox or one of the other acute infectious diseases must always be considered. The presence of coryza, cervical adenitis, and faucial congestion will be of assistance in diagnosing measles, rubella, and scarlet fever, whilst consideration of the following points should enable the observer to exclude modified small-pox: (*a*) the superficial nature of all the lesions; (*b*) the preponderance of the rash on the vaccinated arm, and its absence over the actual vaccination site; (*c*) the comparative freedom from rash enjoyed by the face; (*d*) the indifference of the lesions to points of pressure and irritation; (*e*) the absence of vesicular, pustular, and crusting stages at definite intervals; (*f*) the duration of the period from the date of vaccination to the appearance of the rash; and (*g*) the absence of pre-eruptive illness.

Lichen urticatus is practically indistinguishable from vaccinal lichen, though the former condition is usually of longer duration, with a frequent history of previous attacks. Pruritus is a constant feature, and wheals appear as a result of scratching. Twenty children notified as suffering from small-pox were examined during the five months April to September, 1930, and were found to be suffering from lichen urticatus or papular urticaria. The rash in the majority of these cases displayed a preference for the limbs and buttocks, and was often very prominent on the extensor surfaces of the forearms, the thighs, and the palms and soles. In two such cases in which vaccination was performed there was little change in the appearance of the existing lichen, even though the local vaccinal reaction was moderately severe.

Conclusions.

The majority of post-vaccinal rashes are accidental and are caused by the absorption of secondary products from the vaccine pustule, or are allied to serum rashes. Specific eruptions are much less frequent, while generalised vaccinia is extremely rare. Its occurrence is probably always due to auto-inoculation, in which the lesions are those of accidental vaccinia; if there is strict cleanliness it should not occur.

Most of the rashes encountered were maculo-papular, becoming morbilliform later, while they were often accompanied by urticarial blebs and patches of erythema. The distribution was similar in every case, the rash showing a preference for the limbs, but the face remained relatively free. The rash usually appeared on the eleventh day of vaccination, all the subjects being primarily vaccinated children between 2 and 14 years. The evidence as to whether the rash followed the use of a certain batch of lymph was inconclusive.

In all cases in which doubt exists as to the true nature of the condition it should be treated as small-pox, and the patient who has recently been successfully vaccinated may safely be sent to the isolation hospital.

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5. Report of a Series of Inoculations for the Variolæ Vaccinæ, 1799.*
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* For further information see McVail, Treatise on Hygiene and Public Health: Stevenson and Murphy, 1893, vol. ii., pp. 418, 419.

MODIFICATIONS OF KIRSCHNER'S WIRE EXTENSION METHOD.

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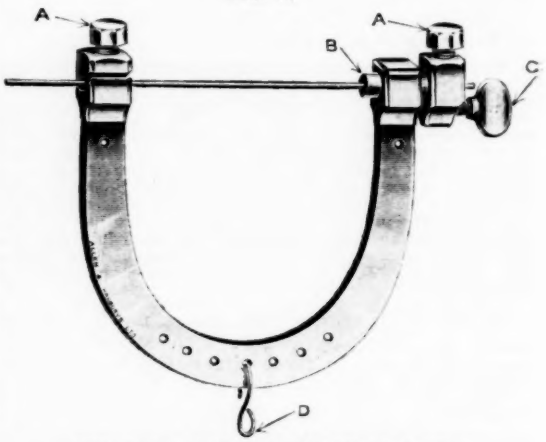
Although the value of skeletal traction was demonstrated by Steinmann [1] in 1907, it is only in the last five years or so that its use has been popularised in this country. It has become generally recognised that in dealing with a recent fracture of a long bone adequate long-axis traction applied directly to the lower fragment makes it possible to correct shortening and obtain correct alignment in a large proportion of these injuries. Under such treatment bone repair proceeds on normal lines and the risk of infection or delayed union which is involved in any method of direct operative attack is avoided. The recognition of this fact has tended gradually to increase the use of skeletal traction at the expense of operations for open reduction and internal fixation. The essential mechanical factor in the method is a secure hold on the distal fragment; the original Steinmann pins, nails, and various callipers which have been introduced are efficient from this point of view, and yield satisfactory positional results. The splint employed does not materially affect the issue provided that it allows for easy adjustment and control of joint position; Braun's or Hey Groves's skeleton cradles or a Thomas splint, bent and slung as may be necessary, conform to this standard. The one drawback to the method has been the occasional incidence of infection in the track of the pin or calliper points. Such infection may not be very common, but when it does occur it leads to sinuses which are slow to heal, and if the infection is at all near a joint may be followed by disastrous stiffening. It is in relation to skeletal traction on the lower end of the femur that the handicap of this complication is most in evidence.

Fig. 1.

Kirschner's stutz harmonica in use.

The liability to infection is presumably determined by the amount of trauma inflicted on the tissues when the pin is introduced, or by the dragging of calliper or pin subsequent to its first application. The substitution of fine steel wire for the more robust structures was first brought in during the second Balkan War (1913) by Teutonic surgeons. Klapp [2] extended its use subsequently and an ingenious method for introducing the wire was put forward by Kirschner [3] in 1927, who also invented a bow strainer. I think there is no doubt that a wire properly introduced and tensioned reduces local trauma to the minimum and consequently reduces the risk of infection. Evidence in favour of this view may be adduced from the rapid growth in popularity of the method on the Continent in the last few years. I have employed it for the last 18 months on fractures of both the lower and upper extremities, and in no instance have I seen infection of the wire track. At first sight it would appear that a fine wire through which a pull of 20 lb. or more is being put would cut through bone. In practice this does not seem to be the case. Block [4] and Koch [5] carried out some experiments on animals and found that in the absence of suppuration only a small cut through of the wire was observed. If the track was infected the wire rapidly cut out.

Fig. 3.

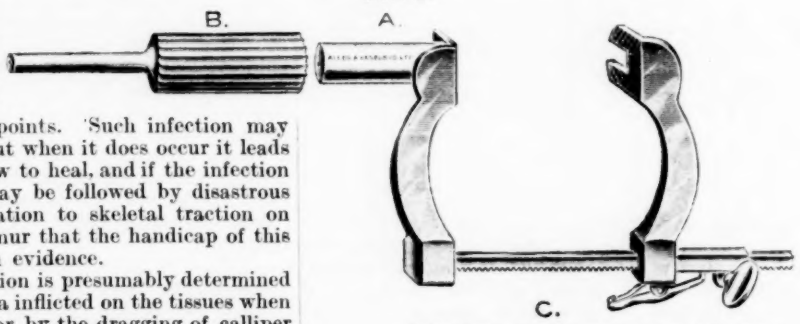


Author's wire strut with self-contained strainer.

Appliances for Passing the Wire.

It seems then that we here have a method of skeletal traction which approaches the ideal. It enables traction to be maintained for longer periods than is possible with the older methods and makes it possible to apply it to smaller bones such as those of the hand or forearm without risk of splintering or infection. The only drawback that can be urged against the method is that it requires some elaboration of apparatus. Kirschner's stutz harmonica (Fig. 1) for the introduction of the wire is both ingenious and effective, but the apparatus is costly and not very durable, nor is it easy to sterilise. Several other appliances for passing the wire are on the market, the best being perhaps Loth's; most of them serve their purpose fairly well, but seem to me to be either

Fig. 2.



Author's clamp guide for introduction of wire through bone.

cumbersome or slow in their action. With a view to overcoming these difficulties I have devised a very simple guide which seems to me of some value (Fig. 2). It consists of a clamp adjusted by a thumbscrew working on a ratchet (C) to which is adjusted a cylindrical block (A) in the long axis of which a hole is drilled large enough to take the ordinary size of wire employed. For transfixion of the os calcis, tibia and fibula, &c., with a short wire the single block guide is sufficient. In order to transfix a thick section of bone such as the lower end of the femur, a longer wire must be used, and therefore more support is required. This is supplied by an additional guide (B) which is made to telescope over the first. The clamp is screwed firmly home and held in position by an assistant during the process of drilling. It will be found that this enables the wire to be introduced accurately in a required direction. The wire can be introduced by an ordinary hand drill, or if it happens to be available, with an electric drill. The advantage in the use of the latter is, I think, merely one of time-saving. When the ordinary hand drill is used an os calcis can be transfixed in about 20 seconds and

FIG. 4.

Author's clamp guide in use.

a more substantial bone such as the femur may take a few minutes. I do not think that the slower introduction has any material bearing on the risk of infection. The heat generated by a motor-driven wire may produce necrosis in the bone track: I have, however, seen no disadvantage arise from this cause in practice. In this country the use of an electric motor is discouraged by the aggravating variations in the type and voltage of current supplied.

Tension of the Wire.

Various kinds of wire have been used for bone transfixion. Kirschner recommends the use of chromium-plated piano wire; this resists the necessary tension better than rustless steel wire. Three sizes of wire are commonly used—viz., of a diameter of 0·8, 1·0, and 1·5 mm., in accordance with the weight to be applied.

Before applying traction the wire must be tensioned sufficiently to keep it straight. Several different kinds of strainer have been devised for this purpose. The original substantial horseshoe introduced by Kirschner seems to be the only one which will maintain full tension for a long period under a heavy pull. Its only drawback is that a special detachable strainer is required to tighten the wire in the first place, and this must be employed when a full length of wire is present. It cannot be used again during treatment as the wire ends will have been cut off. In order to overcome this disadvantage I have had a small self-contained strainer incorporated with the horseshoe (Fig. 3). It consists of a movable sleeve (B) to which the wire is fixed by a grip screw. The sleeve can be withdrawn by a thumbscrew which will be found to tension the wire to the required amount. Adjustment of tension can be made with this mechanism at any stage of treatment. It will make the matter clear if I describe in detail the use of this guide and strainer.

A wire of suitable thickness is fitted into a drill. The wire should not be longer than is necessary to fit the strainer. It will be found that a 5 in. wire can be introduced if only the single guide A is used. If the wire is too long it will be found that the whip between the drill and the guide is so great that drilling is carried out with difficulty. The thicker the wire, the less the tendency to whip. If a wire of 6 in. or more is to be passed the telescopic extra guide B must be employed. The telescopic guide should at the start of drilling just engage the fixed guide A. This gives a total support of 5 in. When the guide B has been pushed right home by the drill end on to A the wire is released from the chuck and the telescoping guide B is removed. The drill is then reattached and drilling completed through the main guide A (Fig. 4). For transfixion of a tibia or femur I have usually employed a wire of 1·0 mm. in diameter. For forearm and fingers a wire as thin as 0·8 mm. has proved satisfactory. The pointed end of the wire is passed through the guide, made to puncture the skin, and pass directly down to the bone. Passage through the bone is effected by steady action of the drill. Should an electric motor be employed the passage only requires a few seconds. The wire will puncture the skin at its exit. The drill is then detached from the wire, the clamp is released by means of ratchet C, and the end to which the guide is attached drawn off the wire; the other section of the clamp is then released. A horseshoe strainer of suitable size is then applied. The holding screws A and A are screwed firmly home, the sleeve B being pushed in as far as possible. Then, by turning the thumbscrew C right-handed so as to withdraw the sleeve, the wire can be tensioned to the required degree. Traction is applied through the hook D after the limb has been placed in a cradle splint.

The instruments I have described have been made for me by Messrs. Allen and Hanbury, of Wigmore-street.

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A SIMPLE METHOD FOR BLOOD CULTURE.

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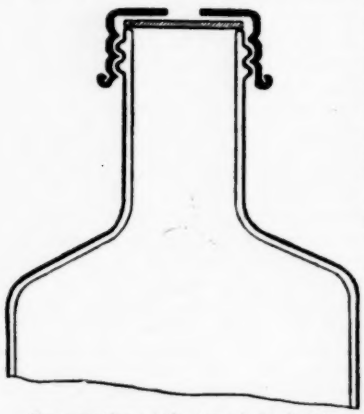
BLOOD culture has always presented difficulties, particularly when it is carried out some distance from the laboratory and the culture medium has to be sent by post or messenger. Containers stoppered with cotton-wool cannot be used, while the ordinary laboratory glassware, such as flasks with rubber stoppers, leave much to be desired. Flask and stopper cannot be sterilised together, and there is always a risk of contamination when the rubber stopper is removed, either by air organisms entering the mouth of the flask, or from dust between the stopper and rim of the flask. The flask is fragile and awkward to pack and transport. To overcome these difficulties the following simple piece of apparatus has been devised.

It consists of a 6 oz. (actually 170 c.cm.) capacity white "medical flat" bottle, with a screw cap.*

* Made by United Glass Bottle Manufacturers, Ltd., 40–43, Norfolk-street, Strand, London, W.C.2.

The composition cork washer is removed and a small hole is punched out of the screw cap. A rubber washer is inserted in place of the cork one (see Figure). The bottle contains broth, and is inoculated by passing the needle of the syringe, after the blood has been withdrawn, through the rubber washer and expelling the contents of the syringe into the broth. The needle is then withdrawn, the puncture in the rubber washer being self-sealing. In order to protect the surface of the cap and the exposed portion of the rubber washer from contamination before use, the cap and neck of the bottle are covered by a Viskap,† such as is seen on perfume and other bottles. This is a cellulose preparation which is slipped on moist and allowed to dry. In so doing the viskap shrinks, moulding itself tightly to the cap and neck of the bottle.



Cross section of the top of the bottle.

The apparatus is fitted up as follows:—

The bottles arrive in a carton already washed, cleaned, and capped, so that no further preparation is required. The caps are white, having been sprayed with a cellulose paint, and it is better to remove this with a little acetone. The composition cork-washer is removed and a $^1/_4$ in. hole punched out of the centre of the cap by means of a hollow punch. A rubber washer $^{13}/_{16}$ in. diameter is cut, either by means of a hollow punch or by clipping the rubber with scissors round a farthing, and fitted into the cap. The sheet rubber used is motor-cycle inner tube, and stands autoclaving without change.

The medium used in the bottle is a matter of individual choice, and can be either plain broth, 0·1 per cent. glucose broth, 0·5 per cent. bile-salt broth, or 0·2 per cent. citrate broth. The various types of broth are identified by the colour of the viskap, thus, for ordinary broth, white; for glucose broth, green; bile broth, yellow; citrate broth, mauve; and so on. The size of viskap for the 6 oz. bottle is No. 2, semi-opaque, cut 1¾in. The viskaps are dyed by placing them in a small quantity of the required colour—e.g., brilliant green, picric acid, gentian violet, &c.—after which they are washed with warm water. 100 c.cm. of medium is placed in the bottle, and the cap with rubber washer, firmly screwed on. The appropriate coloured viskap is now slipped on, and the apparatus is ready for sterilisation, and is placed in the steamer or autoclave. It is my practice to give one hour free steam in the autoclave and then raise the pressure to 5 lb. and turn off the steam. On removal from the steriliser the viskaps dry rapidly and mould themselves to the cap and neck of the bottle. The bottles of broth will keep indefinitely and can be stored without deterioration.

For use the bottle is taken to the bedside of the patient. Just before the vein is punctured the edge of a penknife is run around the screw cap to sever the viskap just above the flange. The point of the knife is then gently inserted under the upper half of the viskap, which can be flicked off without touching the top of the screw cap. Blood (5–10 c.cm.) is now withdrawn from the vein with the usual precautions, and immediately afterwards the needle is passed through the rubber washer, and the blood is expelled into the medium. The needle is withdrawn and the puncture wound of the washer seals itself. The bottle is shaken to mix blood and broth, and sent to the laboratory for incubation. It is advisable to wipe the exposed portion of the washer with a little antiseptic (e.g., lysol) in order to remove any infective material at the site of the puncture.

When the culture is to be examined after incubation the screw cap is removed in the ordinary way. It should be noted that the screw cap is tightened before sterilisation so that no air escapes during the heating. The blood culture therefore is carried out under aerobic conditions. If the caps are put on loose and then tightened after an hour's steaming before autoclaving, most of the air will have been expelled and partial anaerobiosis will be secured.

The advantages of this method are its simplicity, low cost (a few pence), freedom from risk of contamination, ease of preparation and storing, convenience of packing and transport, and ease of identification of the particular medium by the colour of the viskap.

† Made by the Viscose Development Co., Ltd., Woldham-road, Bromley, Kent.

CLINICAL AND LABORATORY NOTES

THROMBO-PHLEBITIS MIGRANS.

A REPORT OF TWO CASES IN ASIATICS.

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ATTENTION has again been drawn to the subject of thrombo-phlebitis migrans by J. A. Ryle (THE LANCET, 1930, ii., 731). On searching the available literature, we can find no reference to this condition occurring in natives, and so we wish to place on record two cases which we had under observation last year.

CASE 1.—A Lascar fireman, aged 22 years, was admitted to the Hospital for Tropical Diseases on May 1st, 1930, complaining of small painful swellings under the skin in various parts of the limbs. These had been developing since the beginning of March, 1930; at times they subsided, but they always recurred worse than before. There were no other symptoms. The only history of any previous illness elicited was that of gonorrhœa three years before, which the patient said had been "cured" by a single injection.

On examination his general condition was good, there was no evidence of dental or nasopharyngeal sepsis, the spleen and liver were not enlarged, the sigmoid was not palpable, the urine was normal, the reflexes were normal, and the blood Wassermann reaction was negative. There were ankylostome and trichocephalus ova in the fæces. There were no microfilariæ present in night or day blood and no malarial parasites. The blood picture was as follows: red cells, 6,400,000; hæmoglobin, 103 per cent.; white cells, 10,200; polymorphs, 53 per cent.; large mononuclears, 5 per cent.; transitionals, 6 per cent.; lymphocytes, 26 per cent.; eosinophils, 10 per cent. The temperature was normal throughout. The veins were affected as follows:—

Right Lower Leg.—The internal saphenous vein was thickened, swollen, and tender for a length of eight inches along the inner aspect of the right calf. In addition, over the subcutaneous surface of the tibia in the lower part of the right leg was a small tender thrombotic swelling and on

the medial side of the tendo Achillis near the ankle was another tender swelling.

Left Thigh.—The internal saphenous vein was thickened and tender for about one inch on the medial aspect of the thigh. This area of thrombo-phlebitis subsided during the patient's three weeks' stay in hospital.

Left Foot.—A superficial vein on the outer side of the dorsum of the left foot was painful and thickened.

Right Upper Arm.—The basilic vein along the middle of the upper arm became swollen and tender while in hospital. A portion of this was excised under local anæsthesia and on pathological examination showed a chronic inflammatory, organising thrombus, with phlebitis and periphlebitis; there was no evidence of filariæ or *Bacillus lepræ*.

CASE 2.—A Malayan seaman, aged 26 years, was admitted to the hospital on Jan. 23rd, 1930, complaining of pain in his right leg and of occasional fleeting pains in various parts of his body. He had first noticed the pain in his right leg during a night watch in October, 1929; two weeks later the leg had begun to swell and it had remained swollen since. He gave a history of a fever, probably malaria, in 1914, dysentery in 1921, and gonorrhœa in 1924. There was no illness immediately antecedent to the onset of the thrombo-phlebitis.

On examination his general condition was good; there were some very septic stumps in his mouth; the liver and spleen were not enlarged; the sigmoid colon was just palpable and was tender; the reflexes were normal; the urine was normal and the blood picture was as follows: red cells, 5,200,000; white cells, 14,000; hæmoglobin, 90 per cent. There were no microfilariæ present in night or day blood and no malarial parasites. Ankylostome ova were present in the fæces. The Wassermann reaction was negative. Radiological examination of the abdomen, pelvis, and thigh for calcified filarial remains was negative. The veins were affected as follows:—

Left Leg.—Superficial vein at the back of the calf was thickened but not tender. There was slight swelling of the left leg which subsided with rest.

Right Leg.—The right leg was definitely swollen, especially the thigh, with distension of the superficial veins of the leg and also of the lower abdominal veins, suggesting a thrombosis affecting the external iliac vein. There was in addition a superficial thrombo-phlebitis affecting the internal saphenous vein in front of the right ankle, where it was thrombosed for several inches and very tender.

The patient had two attacks of generalised abdominal pain with a feeling of distension in the stomach and right side of the chest. In the second attack there was a temperature of 99·5° F. for 24 hours, and diarrhœa with mucus but no blood; there was tenderness in both iliac fossæ and in the epigastrium, but no rigidity of the abdominal wall. Such symptoms suggest the possibility of involvement of the *mesenteric veins* by the thrombo-phlebitis, but in the light of the history of dysentery nine years previously it is not possible to be certain.

The two cases illustrate the simplest variety of thrombo-phlebitis migrans, in which only the veins of the extremities are affected, without implication of the viscera. Ankylostomiasis and a history of gonorrhœa are features common to both cases, but these can have no causal relationship. Otherwise, as is characteristic of thrombo-phlebitis migrans, no ætiological factor could be elucidated.

THYROID TOLERANCE AND BENEFIT IN OBESITY.

BY HILDRED CARLILL, M.D. CAMB.,
PHYSICIAN TO WESTMINSTER HOSPITAL.

A GIRL at the age of 6 showed evidence of syringomyelia. At the age of 11 she developed ulcers on the left sole. When aged 17 consecutive amputations were performed on the left leg which at this date was spastic and deficient in thermal sense. At 23 the left lower limb was amputated above the knee.

When admitted to Westminster Hospital on August 14th, 1928 (aged 26), she had progressive spasticity of the right lower limb. The upper limbs also were affected. The height was 5 ft. 6 in. The weight in night clothes, without the artificial limb which weighed 7 lb. 2 oz., was 14 st. 10 lb. 12 oz.

The Table shows the total reduction (5 st. 7 lb. 4 oz.) in weight during 14 months, and the thyroid dosage. To some extent she was dieted but, as she was so greatly handicapped as regards physical activity with consequent metabolic inhibition and a tendency over many months' illness to be given sweets, stress was not laid upon diet. Weight reduction, however, was imperative as she has to wield an artificial lower limb with the support only of a lower limb which is largely *hors de combat*. At no time did the patient show any intolerance to the drug. During October, 1928, Mr. Rock Carling performed laminectomy at my request. During April, 1929, the artificial limb required considerable adjustment in view of the decrease in body-weight and in the size of the stump.

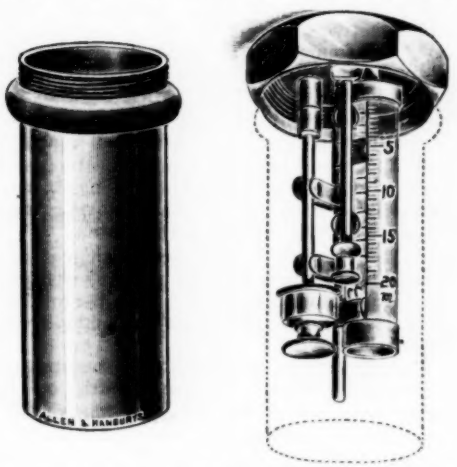
	Weight. st.	lb.	oz.	Thyroid fresh gland, daily.
Aug. 14th, 1928	14	10	12	.... grs. 54 (3·5 g.)
Jan. 30th, 1929	10	8	8	
Feb.–April, 1929	..	—		.... grs. 36
April 19th, 1929	10	10	8	.... grs. 54
June 19th, 1929	9	5	13	
July–Nov., 1929	..			?
Nov. 4th, 1929	10	4	0	.... grs. 18–30
Dec. 23rd, 1929	9	3	8	

On the three occasions the patient was in hospital the thyroid was given as fresh gland combined with adrenal and pituitary glands (Burroughs Wellcome Three Gland Tabloids). Each tabloid contains grs. 6 fresh gland (grs. 5 fresh gland is the equivalent of gr. 1 dried gland).

NEW INVENTIONS

A NEW SYRINGE CASE.

THE case here illustrated is of metal, nickel-plated, and is intended to be filled with rectified spirits to sterilise the contents. The new cone fitting cap ensures absolute freedom from spirit leakage without the use of washers, while the hexagonal top facilitates opening and closing of the cap. The barrel, piston,



and needles are mounted separately, so that there is no possibility of the piston getting stuck in the barrel if the syringe is not used frequently. In use the cap is unscrewed and placed on the table upside down, when it will act as a stand on which the components of the syringe are mounted. The pillar of the stand is attached to the cap, so that the withdrawal of the cap removes the components of the syringe at the same time.

Messrs. Allen and Hanburys, of Wigmore-street, W.1, are the makers of the syringe case.

MILROY PAUL, F.R.C.S. Eng., M.R.C.P. Lond.,
Ceylon Medical Service.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTION OF ANÆSTHETICS.

THE March meeting of this Section was held, by consent of the Vice-Chancellor, at the University of Bristol on March 7th, Dr. H. W. FEATHERSTONE, the President, in the chair. A symposium on the

Barbiturates in Anæsthesia

was opened by Dr. M. NIERENSTEIN, who described in detail the chemistry of barbituric acid and its derivatives. He showed that all those drugs which have recently attracted so much attention, from veronal through allonal and medinal to sodium amytal and nembutal, are attributable to the chemical work of Nebenthau in 1898–1901. The Nebenthau factor, NH–CO, the exclusion of mobile hydrogen and the various side chains, were explained by the speaker, who showed how the presence or absence of narcotic properties in any given organic compound of this series could be foretold. Chemically he had little to say in favour of pernocton, but showed how the asymmetrical carbon atoms of amytal and nembutal favoured their absorbability by the human body. Veronal, luminal, allonal, and neonal he regarded as chemically identical. Dr. Nierenstein regretted the fact that hitherto all the chemical advances from barbituric acid had been made along the line of least resistance, and thought that perhaps more valuable compounds could be obtained if chemists sought those that were less easily constructed.

Mr. A. L. TAYLOR, regarding the barbituric compounds as hypnotics, analgesics, or anæsthetics, had sought to arrange their qualities in accordance with molecular weights, stability, relationship between minimum active and lethal doses, and excretory facility. He found that a quick breakdown in the organism, and consequent irrecoverability from the urine was essential if these bodies were to act as anæsthetics. A small dose and rapid decomposition were desirable and these were represented in nembutal.

Mr. A. L. FLEMMING spoke from clinical experience, and pointed out the necessity for prolonged care and watchfulness over patients in the recovery stage of anæsthesia after the use of barbiturates.

Mr. W. S. V. STOCK had been using pernocton systematically for three months and was well pleased with it. He gave it at the rate of 1 c.cm. per minute and preceded it by an injection of morphia given 20 minutes earlier.

Dr. FEATHERSTONE had employed sodium amytal and nembutal, either by the mouth or intravenously, both for normal labour cases and for Cæsarean section with spinal analgesia. For the latter purpose he gave grs. 4½ by the mouth one hour before operation. No other medication was employed, and he varied the dose down to grs. 3 for feeble, pale, or undersized patients. The patient was kept quiet in a darkened room till the time came for the spinal injection. Then she was turned gently on to the side. She was usually asleep or tranquil if awake. The injection was then made through an intradermal wheal raised by novocain. The eyes were then covered and the patient arranged on the operating-table. At this stage there was often discomfort and sometimes retching before one used nembutal. In most instances after the use of nembutal recollection of the operation was hazy, if there was not complete amnesia. There was great difficulty in gauging the dose to give by the mouth. Sometimes the full effects were present a quarter of an hour after the capsules had been swallowed, in other instances more than twice as long was necessary. No second dose was given. The uterine contraction was good in every instance and the child unaffected except for slight sleepiness. There was never any depression of breathing in the infant. Out of 11 patients one had severe headache for two days. Restlessness or pain after the operation was controlled by gr. ⅛ or gr. ¼ morphia. In the presence of serious renal affection one should be wary of employing nembutal. Intravenous sodium amytal and nembutal had not proved satisfactory in combination with spinal analgesia, the fall in blood pressure being too great. With regard to midwifery he had found that 1 g. of sodium amytal injected intravenously just before full dilatation of the os produced painless labour. The frequency of uterine contraction was unaffected and the child in no way embarrassed. The dose must be given slowly. Sodium amytal was preferable to nembutal, the effect lasting longer. A normal woman after 1 g. would go through 6–10 hours of labour with little more than a dim memory of the pain occurring at the time of the actual birth of the child. After quick deliveries patients often remembered nothing from the time of the injection till hours after the delivery. The regular contractions of labour continued with the same rhythm during and after the injection of the drug. There was some danger of precipitate passage of the head over the perineum with resulting tear. At the time of delivery there was sometimes excessive restlessness making the patient hard to control. A series of small doses of amytal proved less satisfactory than the one big dose.

Mr. F. S. TAIT corroborated Dr. Featherstone's experiences with sodium amytal and related the details of a primipara whose labour was conducted under the influence of a dose of 0·5 g. given in five minutes. Pains were then occurring every five minutes. The birth had taken place 2½ hours later. The baby cried directly after birth and the mother when fully conscious two hours later had no knowledge of the confinement at all. Mr. Tait laid stress on the difficulties sometimes arising from restlessness and on the danger of precipitate expulsion when the head reached the perineum.

Dr. H. H. RUBRA pointed out the advantage of sodium amytal in operations for submucous resection of the nasal septum. A bloodless field was easily obtained. He gave morphia one hour before and grs. 6–9 of amytal. He thought that no barbiturate should be employed in the presence of any active lung lesion.

Dr. LANGTON HEWER had employed nembutal by the mouth and referred to the difficulty of estimating the correct dose and to the idiosyncrasy towards the drug which might be encountered. In one instance a man of 30 who received grs. 4½ of nembutal and then nitrous oxide and oxygen was semi-delirious on recovery and then vomited for six hours. On a second occasion he underwent a similar operation under nitrous oxide and oxygen preceded by "Hyoscine" A and was not sick at all.

Sir FRANCIS SHIPWAY regarded all intravenous methods as associated with a certain amount of inevitable risk. He had seen good results from nembutal by the mouth associated with small doses

of morphia. This combination, however, was never to be employed upon children.

Mr. R. J. CLAUSEN spoke strongly in favour of pernocton. He found that to combine it with morphia was an uncertain proceeding, some patients requiring more of the pernocton and taking longer to become anæsthetic than when no morphia was used.

After the discussion Prof. R. J. BROCKLEHURST demonstrated two cats who had been given, one sodium amytal and the other nembutal by intraperitoneal injection. The dosage had been several times as great as that used with human beings. The narcotic effect was obviously extreme and both animals appeared more dead than alive. They breathed, however, now and then, and the blood pressure only occasionally fell excessively.

SECTION OF PSYCHIATRY.

AT a joint meeting of this Section with the Society for the Study of Inebriety on March 10th, the chair was taken by Dr. S. A. KINNIER WILSON, President of the Section, and a discussion on the

Prevention and Treatment of Drug Addiction

was opened by Dr. WILLIAM BROWN. He divided the patients into four classes: (1) those who had become victims through taking drugs for pain or sleeplessness—not more than 3 per cent.; (2) those who had taken them to seek some new experience—over 90 per cent. of all addicts, consisting mainly of persons of the criminal class; (3) those who had taken them to increase efficiency in work—the extremes of the creative artist and the manual labourer; (4) those who had taken to drugs for special reasons of their own. Methods of prevention differed in the different classes. In the first class the underlying illness should be dealt with; in the second class the treatment lay in preventing access and moral infection and in strengthening character and helping its development; in the third class other steps to increase efficiency should be taken and the drug traffic must be attacked; in the fourth class the method of prevention took a general character of sympathetic investigation of the cases and use of suitable psychological methods.

Physical methods of treatment were indispensable in all but the slightest cases and involved residence in a home for slow detoxication by special methods, such as the production of hyoscine delirium and sweating. The psychological aspect was of the utmost importance, both in prevention and cure. The patient's mental constitution was one that demanded excitement; many addicts were of the cyclothymic type and found that morphia relieved their periodic depression. They were people who wished to get out of the express train of existence and play in the fields in the sun; they did not wish to be cured and their scale of values was demoralised. Hypnotism was justified, if the patient could be hypnotised, to mitigate the pains of disintoxication. It served as an alternative stimulus, but analysis was always necessary as well, and should be prolonged if possible so that the cause of addiction could be made clear. The patients needed to be trained in the use of their wills; an essential part was calm belief in the success of their efforts and a resolution in which the whole mind was involved. They must be helped to get completely at one with themselves. The doctor must not hesitate to use the transference situation and give himself up to his patient until recovery was attained. Treatment should be continued for years, as there was great danger of relapse.

INTERNATIONAL ASPECT OF THE PROBLEM.

Dr. EDWARD MAPOTHER said that the problem was a small one in this country; the Home Office only knew of 250 addicts. The cure of addiction was the task of the doctor and often a hopeless task. Prevention was the better way, but this depended on the politician. Any real progress depended on the development of an international conscience. Attempts to find an alternative local anæsthetic to cocaine had unfortunately proved unsuccessful. The difficulties with opium and its derivatives were political rather than pharmacological; the necessary goodwill and good faith were lacking. Turkey, Russia, and Persia had refused to regulate their output. International control was therefore conducted by a system of licences which left the loyal countries at the mercy of unscrupulous producers in other countries unless smuggling could be made unprofitable. In England only one firm was manufacturing cocaine and only two were manufacturing opium derivatives. Turkey exported 14 tons of drugs last year, an amount exceeding the needs of the world, and obviously meant for smuggling. Japan manufactured enormous quantities of cocaine. In America over 100,000 addicts were known, but over half a million were known in Egypt. Opium was being replaced by narcotic alkaloids in China, with disastrous results, and there were now millions of true addicts. In these matters England was one of the model countries of the world. There was little smuggling, and, despite the vigilance of the police, there had only been 70 prosecutions during last year, most of them for minor book-keeping offences. The illicit supply by chemists or doctors was very small indeed.

The cocaine habit in this country was hardly ever the result of medical treatment, but addiction to morphia or heroin usually followed treatment. Cocaine was usually taken to induce pleasure and morphia to reduce displeasure. The part played by an underlying psychopathic constitution was much disputed; it was possible to think too biologically and neglect the psychological element. In countries where these drugs were habitually taken in small quantities cases of addiction were few. The people who took drugs were the spoilt-child type who could not forego immediate gratification for a delayed motive; they were also sexually promiscuous, hence the frequent association of drug-taking with prostitution.

Dr. MACDONALD CRITCHLEY said that, although the cure was psychological, physical methods had a place and might do valuable preliminary spade-work. Divers cures and régimes had been advocated. The oldest recommended massive doses of sedatives, of which hyoscine had become the most popular, although many preferred the less violent belladonna. Lambert and Tilney had introduced a treatment to fix the morphia antibodies which they believed to be the cause of withdrawal symptoms, and forbade sedatives. Later workers had failed to substantiate the early promise of this method. During the last six months an insulin treatment had been suggested and great success had been claimed for it. Adrenalin, subcutaneous oxygen, and endocrine substances had been tried by other workers.

IMPORTANCE OF FATIGUE IN MORPHINISM.

Dr. F. G. LAUGHTON SCOTT thought that Dr. Brown's third class was as numerous and important as all the others together. Many medical men adopted morphia in times of stress and continued it for its stimulant and not its narcotic effect. The majority of English

addicts were not running away from life, but needed a special type of stimulation before they could face it effectively. It was instructive to look on morphia addiction from this point of view. The stimulative effect on dogs seemed to act chiefly on the vagal centre, which remained sensitive to minute doses. The consistently over-stimulated person was bound to show exhaustion and over-fatigability when the stimulus was withdrawn, and this must be remembered at every stage of treatment. During the withdrawal stage the patient must be protected from pain and discomfort as far as possible. All the modern methods involved great hardship. Belladonna in these methods was only used to make the patient delirious, but delirium was one of the shocks to be avoided. Belladonna could, however, be advantageously used in small doses as a vagal stimulant, and could take over the vago-stimulant action of the morphia, considerably modifying the bursts of sympathetic over-action. The undue fatigability lasted a very long time—a year or more at least. Fatigue played an important part in relapses.

PSYCHO-ANALYTICAL TREATMENT.

Dr. EDWARD GLOVER said that any non-psychological treatment might be compared to calling scarlet fever "the scarlet habit" and powdering the rash until it disappeared. The underlying narcissistic elements and paranoid tendencies were very important. In true addiction the importance of the drug to the patient was largely psychological. The radical cure depended on the resolution of the various component states. The psycho-analyst asked for suspension of judgment on drug addiction until more research had been made into organ-erotism. Swallowing the drug might be followed by genital excitement. Symbolism also played a large part, and the syringe had strong phallic significance. The complexity of psychic formations in the first and second years of life had been underestimated. The drug used by addicts represented elixirs envisaged in infancy. Addiction was to paranoia as suicide was to murder, and much might be learned from a study of the psychology of poisoners. True prevention must go deeper than preventing access. It was not difficult by psycho-analytic treatment to reduce the dose to a minimum, but the last drop held the symbolism, and if it was abandoned the patient usually showed a hysterical outbreak or neurosis with psychotic basis. Cure depended on the analysis of these states.

DISCUSSION.

Dr. MURDO MACKENZIE said that it was important to decide whether "drug addiction" was a diagnosis or a symptom. In his experience the type of patient who used a syringe was a depressive, while those who did not use it were more schizophrenic in type. All that could be postulated about drug addiction was a fundamental instability, and thereafter diagnosis must be made in the individual case. Therapy depended on diagnosis and a generalised therapy could not apply to different psychological types.

Dr. C. W. BRASHER thought that the Home Office had underestimated the number of addicts in this country.

Dr. MARGARET C. VIVIAN referred to an Egyptian doctor's treatment by intramuscular reinjection of blister fluid.

Dr. V. S. HODSON pointed out that the labourers in Egypt had used hashish before the introduction of heroin because of its aphrodisiac properties. They probably used heroin for the same purpose rather than as a stimulus to work, and their overseers supplied them with the drug because they shared the profits of consequent promiscuity.

Mr. H. E. NORMAN spoke of hashish addiction in South Africa ostensibly as a stimulant to work and against depression, although it was also generally believed to have an aphrodisiac action.

LADY HORSLEY asked if auto-suggestion would be effective for alcohol.

The CHAIRMAN spoke of the difficulty of defining addiction. John Hunter had taken a teaspoonful of laudanum before every lecture, the Styrian peasant ate arsenic constantly, and the natives of Bolivia chewed coca leaves. Two nurses, aged 24, had once taken a hypodermic of morphia for fun: one of them had been violently sick and had never taken it again; the other had taken it for 40 years, never more than 2 grains a day. After "cure" at the age of 64 she regarded her previous life with the drug as more real than the present life without it. Many people who took a drug for its stimulant effect were normal, useful people who could never be detected. He himself had seen 25 cases in private and had had a cure in 24, some remaining cured, others returning for treatment every year and yet being useful members of society. It was legitimate to treat symptoms in these mild cases; he had used hyoscine but never to the extent of delirium.

Dr. BROWN, in reply, said that a drug addict was one who needed larger and larger doses, and was mastered by the drug so that he became more and more degenerate. Auto-suggestion could be very successful in alcoholism. The majority of drug addicts, in his experience, were of the paranoid type. Physical and psychological factors both played a part.

LIVERPOOL MEDICAL INSTITUTION.

AT a meeting of this Institution on Feb. 12th, with Prof. W. BLAIR BELL, the President, in the chair, a paper on

Anæsthesia in Childbirth

was read by Mr. J. ST. GEORGE WILSON. He held that in labour an attempt should be made to retain the use of the voluntary muscles of expulsion. Some form of local or regional anæsthetic was therefore desirable, and he had decided on sacral anæsthesia, produced by extradural injection into the sacral canal. In this he followed the technique described by W. Evans (THE LANCET, 1930, ii., 1225). The anæsthetic used was 1·5 per cent. novocain; 40 c.cm. freshly prepared gave the best results. Other anæsthetics, percaine and 1 per cent. planocaine were not so satisfactory. The method described produced anæsthesia of the vagina and vulva with retention of "bearing-down efforts," but not abolition of the sacral pains of labour. Relaxation of the perineum was not marked. The duration of anæsthesia was one and a half hours. In primiparæ injection should be made when the head was beginning to distend the perineum and in multiparæ when the cervix was fully dilated. Forceps deliveries, delivery by the breech with extended legs, and repairs of the perineum, could be carried out without other anæsthetic. The method was easily performed and nurses had been trained to carry it out.

The PRESIDENT said that any attempt to simplify anæsthesia during parturition was worthy of serious consideration. At the present time there was a campaign for the provision of anæsthesia in all

labours. This, of course, could not be maintained on scientific grounds; it was a sociological sentiment, which was justified in so far that whenever there was no contra-indication the pain of labour should be prevented. The ideal single anæsthetic for labour had still to be discovered; it should be one that did not interfere with the muscular contractions of the uterus, yet allayed all pain. Further, it should have no harmful effect on the mother or child, be easy of administration, and be amenable to control. It did not seem likely that all these attributes could be possessed by one substance. It was possible that a mixed method such as local perineal anæsthesia to relax the muscles of the pelvic floor and to make that region insensitive, together with a drug to abolish painful impressions without interfering with uterine contractions, would meet the demands to a great extent. Sacral anæsthesia, as Mr. Wilson himself admitted, had not fulfilled all the requirements.

Dr. C. ALLAN BIRCH said that as the presence of the fœtal head on the perineum normally caused strong expulsive contractions at the end of the second stage, one would expect some delay in the birth of the head if the perineum was rendered anæsthetic.

Dr. C. G. BRENTNALL said that as a general practitioner he was interested to know the cost of this method of anæsthesia; for practical purposes it did not appear to offer much advantage over the usual anæsthetics given under medical supervision by a midwife during delivery. He asked if Mr. Wilson noticed any effect on the fœtus.

Dr. B. N. MURPHY inquired what happened to the 40 c.cm. of local anæsthetic and why it had to be injected with considerable force.

Dr. A. A. GEMMELL congratulated Mr. Wilson on producing a method which enabled one person to act as both accoucheur and anæsthetist. The perfect anæsthetic would abolish the pain of uterine contraction without interfering with either its force or its frequency. One of the chief reasons for desiring an anæsthetic in labour was to avoid the onset of obstetric shock, and Dr. Gemmell wished to know if Mr. Wilson had any cases of shock in his series, or had obviated shock in any case in which it might ordinarily have been expected.

Dr. HUBERT ARMSTRONG asked if the novocain itself produced shock or syncope, as it sometimes did in dental extractions.

Dr. M. M. DATNOW said that Mr. Wilson's method appealed to him, especially as one could manage without an anæsthetist. He had frequently used spinocain in operative midwifery and had found it satisfactory. It did not interfere with the uterine contractions, there was a considerable diminution in the amount of bleeding, and if combined with scopolamine it gave a good anæsthesia with very little subsequent discomfort to the patient.

Dr. R. J. MINNITT thought there was a large field of research possible in this direction. He had had some experience of gas and oxygen in midwifery, and believed that the higher percentages of gas with rebreathing, while producing unconsciousness, tended to stimulate the pains of labour.

Dr. C. O. STALLYBRASS read a paper on

Immunisation against Diphtheria and Scarlet Fever.

Whilst hospitalisation of cases had, he said, greatly diminished the prevalence of several diseases, this had not happened in scarlet fever and diphtheria.

After the introduction of antitoxin, the fatality-rate and also the death-rate from diphtheria had been greatly reduced and the same was true of scarlet fever, though for more obscure reasons. The advent of the Schick test had permitted the separation of the susceptible from the insusceptible, and this could now be done for scarlet fever by the Dick test. In 1913 immunisation against diphtheria was begun. At first antitoxin was used, but later a modified toxoid was employed; this was even more effective and free from all objections. More recently similar methods of inoculation against scarlet fever using an unmodified toxin had been adopted. In Liverpool it had now become common to inoculate simultaneously against the two diseases. After quoting figures to show the efficiency of these measures, Dr. Stallybrass detailed his own experience of immunisation against scarlet fever and diphtheria in institutions in Liverpool. Not only could outbreaks of these diseases in orphanages and the like be rapidly brought to an end, but it was noticeable that where fresh entrants to the institution had been tested or immunised, they remained free from the diseases. As two-thirds of the deaths from diphtheria and scarlet fever occurred under the age of 5 years, immunisation was preferably carried out about the second year. Fortunately this was the time of life when reactions as a result of inoculation practically never occurred. Such reactions were, however, not infrequent in adults.

Dr. ARMSTRONG said he thought errors of technique did not explain occasional failures both of the Schick test and of the inoculations to produce immunity. He instanced two young adults who had developed diphtheria shortly after negative Schick tests (with controls), and two others who had contracted the disease, one three months and the other six months after a full course of immunising injections. On the other hand, he was confident that the general results were dependable, and he had been impressed by the complete stamping out of diphtheria in the Blue Coat School by these means during the last five years.

Dr. C. RUNDLE gave an account of some of the early immunisation tests which he had witnessed in the United States. He also spoke of the importance of developing public interest by propaganda.

Dr. BRENTNALL said that in two instances where scarlet fever had occurred in the children's ward of a general hospital passive immunity had been employed as a method of preventing infection, and with apparent success.

Dr. A. E. HODGSON said that the routine active immunisation of the nursing staff against scarlet fever at the City Hospitals, Fazakerley, was instituted in June, 1926, since when only three nurses had developed the disease. In the 12 months before that date, 11 nurses contracted scarlet fever in the course of their duties, and one of them died. Active immunisation of the nursing staff against diphtheria began in January, 1929, and no case had occurred since then.

Dr. N. B. CAPON stated that in his experience the Schick test had been very helpful and reliable. He hoped a prophylactic preparation would soon be available which would render children immune to diphtheria within a comparatively short time.

Dr. T. B. DAVIE asked whether in view of the temporary nature of passive immunity it was not deemed advisable to immunise during convalescence those patients who, by having contracted diphtheria, had been treated by antitoxin.

SHIPLEY AND BINGLEY MATERNITY HOME.—Mr. Greenwood, Minister of Health, last week opened a maternity home to be run jointly by the Shipley and Bingley urban district councils.

SHEFFIELD MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society on Feb. 18th, with Prof. GRAHAM SIMPSON, the President, in the chair, Mr. W. J. LYTLE read a paper on the

Injection Treatment of Hæmorrhoids.

Despite the good and lasting results of operations for the cure of hæmorrhoids, treatment by injection of sclerosing fluids was, he said, being employed with increasing frequency. Apart from its safety, the advantages of the method were that it required neither anæsthetic nor confinement to bed and that it caused no pain. The solution which had given the best results was 5 per cent. carbolic acid in almond oil, as suggested by Albright and Blanchard. This solution was preferable to the older 20 per cent. carbolic acid in glycerin. The injections were most conveniently made in the left lateral position with the aid of McEvedy's lighted speculum. The solution (3–5 c.cm.) was injected well above the level of three selected piles into the submucosa. At this level the mucous membrane was insensitive to pain. Two subsequent injections were made at weekly intervals, each of them below the level of the previous one. Simple uncomplicated internal piles should be selected for treatment by this method. Those which were prolapsed and thrombosed or were complicated by fissure in ano were unsuitable for injection. The immediate results were excellent. All symptoms disappeared after the first or second injection. In his own cases it was too early to speak of the final results, but the good effects appeared to be permanent. No complications were to be feared except ulceration from inadvertent injection of the solution into instead of beneath the mucous membrane.

Mr. Lytle also described the treatment of fissure in ano and pruritus ani by the injection of anæsthesin, benzyl alcohol, and ether or percaine in oil as suggested by W. B. Gabriel. For anal fissure Mr. Lytle advised injections of 2–5 c.cm. into the sphincter. This produced a relaxation of the muscle which allowed the fissure to heal. If a sentinel tag was present it should be removed. In deeply undermined fissures operative treatment was necessary because, although symptoms were relieved by injection, the fissure would not heal because the parts were not at rest. In cases of pruritus ani which failed to respond to other methods he had found that the injection of these anæsthetic solutions into the subcutaneous tissues around the anus were often very beneficial.

REPORTS AND ANALYSES

MARSHALL'S LYSOL.

(LYSOL LIMITED, RAYNES PARK, LONDON, S.W. 20.)

AT the request of the manufacturers we have made an exhaustive examination of Marshall's Lysol. The tests have been carried out on samples of the disinfectant purchased by us from a retail chemist.

We can confirm that the Rideal-Walker carbolic coefficient of this disinfectant solution, using *B. typhosus* as the test organism, is indeed the 2·5 claimed for it; in our actual experiment the value 2·54 was obtained.

In practice Marshall's Lysol should be a reliable disinfectant when used as directed—that is to say, a dilution of 2 : 100 for washing the hands and 1 : 100 for the patient's body. The action of the disinfectant upon *Staphylococcus aureus*, *Streptococcus pyogenes*, and *Streptococcus hæmolyticus* is quick and effective in these dilutions as the following table of experiments will show :—

Micro-organism and temperature.		Maximum time required to kill in— Dilution— 1 : 200	1 : 100	2 : 100
Staphylococcus aureus ..	37° C.	5 min.	30 sec.	Less than 10 sec.*
	18° C.	20 min.	2½ min.	22 sec.
Streptococcus pyogenes ..	37° C.	5 min.	30 sec.	10 sec.
	18° C.	22 min.	2½ min.	25 sec.
Streptococcus hæmolyticus	37° C.	2 min.	15 sec.	Less than 10 sec.*
	18° C.	10 min.	1¼ min.	12 sec.

* It was not found possible to measure times of less than 10 seconds with any degree of accuracy.

The two temperatures chosen, for the test of the power of the disinfectant in regard to each of the organisms, were selected as representing the normal body temperature on the one hand and that of a cool room on the other, since in this way the action of the disinfectant is seen under what may be called working conditions. It is, of course, a well-recognised fact that disinfectants work more slowly at a lower temperature than they do at the temperature of the body, and it is therefore of great importance that temperatures lower than that of the normal body also should be used in assessing the value of a disinfectant which may at certain times be called upon to carry out its action at a temperature as low as that of a cool room.

From the Table it will be evident that Marshall's Lysol possesses some selective action in regard to its disinfectant action on cultures of *Streptococcus hæmolyticus* since, for the same concentration, it is capable of destroying this organism in a shorter time than the others used in our tests.

We found the disinfectant to be free from alkalinity, but at the same time, from the nature of the preparation, it is a good solvent for grease and therefore possesses considerable powers of penetration.

Chemically we can confirm the presence of more than 50 per cent. cresol. Inorganic sulphur compounds were absent and organic ones present in negligible amount only. Pyridine and naphthalene as impurities were present to the extent of less than 1 part in 5000.

The disinfectant as sold contains no sediment and yields clear solutions with water; a 5 per cent. solution in distilled water failed to show the presence of any sediment on standing.

SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—Last year this hospital admitted 4112 in-patients and treated 16,890 new out-patients. A new X ray department was opened and three new wards will be ready for occupation shortly. The maintenance and income for the year was £30,015, and the expenditure left a credit balance of £130. Of this income £10,291 was derived from the contributory scheme and £2004 from payments by patients. The in-patients remained on the average 13·71 days.

REVIEWS AND NOTICES OF BOOKS

A Short Practice of Gynæcology.

Sixth edition. By HENRY JELLETT, B.A., M.D. Dublin, F.R.C.P.I., Consulting Obstetrician to the Department of Health, New Zealand; Consulting Gynæcologist and ex-Master, Rotunda Hospital, Dublin; and RICHARD E. TOTTENHAM, B.A., M.D., D.P.H. Dublin, F.R.C.P.I., Professor of Obstetrics and Gynæcology, University of Hong-Kong. London: J. and A. Churchill. 1930. Pp. 525. 21*s*.

THIS new edition of Jellett's well-known text-book has been thoroughly revised by Prof. Tottenham, and incorporates the more recent advances in gynæcology. The book is now 100 pages larger than its predecessor, the increase in size being due chiefly to the introduction of an excellent chapter on sterility, of an account of the treatment by radium of cancer of the cervix, and of a large number of new illustrations, many of which are taken from American sources. Neither here nor in previous editions has any account been given of ectopic gestation, which is the more regrettable since this condition figures largely in modern gynæcological practice, and is always treated in gynæcological wards. In the section on radium it is not clear whether the dosage recommended refers to the element or to the salt, and we doubt the wisdom of such a dogmatic statement as that "radium is not contra-indicated in cases of cancer of the cervix in pregnant women, and living children have been born afterwards." Certainly living children have been born, but their birth is hardly desirable since a large proportion of them are likely to be microcephalic idiots! For this reason it should be made a rule to terminate pregnancy immediately if radium is applied to the cervix. No mention is made of the Heyman technique, an important omission at a time when his methods of radium treatment are being largely adopted in this country.

In operative technique the authors show a decided preference for American methods. Several ways of performing total hysterectomy are described, but little guidance is given on such an important matter as the preliminary treatment of the vagina; nor do we find any clear assessment of the advantages and disadvantages of total as compared with subtotal hysterectomy. The retention of the term "ventral" hysterectomy has no virtue, especially since in the illustrations the better known term "abdominal" hysterectomy is used. One important diagnostic sign in cancer of the cervix—friability—is ignored. It is questionable whether tapping an ovarian cyst prior to removal as advised in the text is ever justified. Ten pages are devoted to a gallant attempt to deal in a logical way with endometritis. All our old friends, glandular, interstitial, and cystic endometritis, and mixed forms that most of us had thought decently buried in oblivion, are given a new lease of life; while under the terminology uterine displacement 12 diagrams are devoted to making plain the mysteries of dextroversion and flexion and sinistroversion of both uterus and cervix. These, however, are but unimportant smudges on an excellent canvas.

Dr. Jellett's attractive style is a recommendation for any text-book, and this has suffered no eclipse in the present edition. The student and practitioner will find the book sound, trustworthy, and for the most part up to date.

Lehrbuch des Stoffwechsels und der Stoffwechselkrankheiten.

By S. J. THANNHAUSER, Professor of Medicine, Düsseldorf. Munich: J. F. Bergmann. Pp. 741. M.56.80.

THIS work presents the known facts of metabolism and metabolic disease in a way which is unfamiliar to readers of British text-books. Prof. Thannhauser seems to combine to an extraordinary degree those qualities which are now beginning to dominate the medical world—we mean the combined qualities of the clinician and the laboratory worker. His work is already well known in the sphere of biochemical research, and in this volume he shows what is meant by the "rapprochement" of the ward and the laboratory. In some sense this book may be regarded as an index of the type of knowledge which is likely to be demanded from the physician of the future. The day of vague generalities is over, and the processes involved in disease can be studied adequately only by those who are prepared to take profound pains to become acquainted with physico-chemical phenomena in addition to the outward manifestations of clinical signs and symptoms. Prof. Thannhauser has not contented himself with a pedantic presentation of metabolic diseases, but has indicated the problems and lines of research which might lead to fruitful results. The literature has been searched with painstaking thoroughness, and the separate sections can be recommended as valuable starting points for the young worker beginning research in metabolic disease.

A feature of interest is the valuable chapter on the metabolism of pigments. Admirably complete and detailed discussions on certain classical problems are presented—for example, the transformation of fat to carbohydrate. The author gives apparently unequivocal evidence against the views of Geelmuyden and others with great energy. It seems likely, however, that the difficulty in the direct demonstration of the reversible reaction fat $\rightleftarrows$ carbohydrate will one day be overcome, and that the power of the body to perform even this feat will be demonstrated. Up-to-date information on the uric acid problem is supplied, and suggestive experimental work is described. Diabetes is dealt with in a masterly fashion, and the scientific principles of the treatment of this condition are fully presented. The water economy in the organism is discussed, and the modern theories of œdema are critically examined.

The book may be recommended to the clinical research worker and the general physician as a stimulating contribution to medical literature.

Diseases of Children.

By BRUCE WILLIAMSON, M.D., M.R.C.P., Physician to the Royal Northern Hospital; Assistant Physician to the Prince of Wales's General Hospital. Edinburgh: E. and S. Livingstone. 1931. Pp. 290. 10*s*. 6*d*.

Dr. Williamson has made it his aim to provide a really short but complete account of diseases of infancy and childhood. This task is not an easy one, and moreover the exact scope of a book of this kind, when completed, is difficult to assess. Dr. Williamson has managed to produce a work which, though highly

condensed, has distinctive features of its own, and is not a mere excerpt from text-books. It is dedicated to Dr. G. A. Sutherland, and the evidence which it shows of the influence of this teacher will give pleasure to many readers. The section on cardiovascular disease is perhaps the most interesting and original part of the book. Great stress is laid on the differentiation of intrinsic and extrinsic tachycardia, which is determined by comparison of the sleep-rate and the "alert-rate," and by the effect of holding the breath in producing vagal stimulation and slowing. The short accounts of the common fevers and of infant feeding are useful.

This book should be of service for revision purposes, and as a vade-mecum for busy practitioners.

The Human Body.

By LOGAN CLENDENING, M.D. London: A. A. Knopf. 1931. With 102 illustrations. Pp. 399. 10*s*. 6*d*.

WE are glad to see a second (and cheaper) edition of this excellent popular guide to anatomy, physiology, and disease. Lay people are always liable to be got at by cranks and faddists to whom the profession will not listen. We have here a sane and accurate account of health and sickness by a sensible and kindly human being who happens also to be a well-informed medical man. Some people are disgusted with their bodies and do not want to know anything about them; those who do cannot do better than go with Dr. Clendening.

William Stewart Halsted, Surgeon.

BY W. G. MACCALLUM. London: Humphrey Milford, Oxford University Press. 1930. Pp. 241. 12*s*. 6*d*.

THIS short biography of a well-known American surgeon will possess many points of interest for English readers, and Dr. MacCallum the author, being pupil, colleague, and tried friend of Halsted, has been able to produce a sympathetic and intimate piece of work. Halsted graduated in medicine at Yale in 1874, and thereafter New York was the scene of his early activities. His labours here in the cause of education and in association with the work of several large general hospitals were intense, and he earned the reputation of being a brilliant technician. Later he migrated to Baltimore, and in 1889 we find him Associate Professor of Surgery, with a chair at the medical school of Johns Hopkins University then nearing completion. At Baltimore he added to his fame, and here he may be said to have accomplished the three great aims of his professional life—the promotion of better modes of technical procedure in surgical operations, the study of certain notable problems in disease with which his name is fully associated, and the establishment of a school of surgery. In this triple range of work he received the assistance, among others, of William H. Welch, William Osler, and Harvey Cushing. Brilliant as much of Halsted's work was, it is not so much the surgical procedures and inventions as his general attitude towards surgery that made him notable, and that attitude is well described in a brief prefatory note by Dr. Welch who calls attention to Halsted's love of truth, clearness in formulation of problems, and fairness in interpretation of results. His extraordinary neatness and accuracy professionally was reflected in the carefulness of his attire which in many men would have been considered sheer affectation, but in Halsted was an expression of his passion for finish. "Every detail," we learn, "was guarded—every suit of clothes, and he had dozens of them, was made by the best tailor in London. His shoes he had made in Paris, for some strange reason—and there he insisted on selecting the particular place in a skin from which he would have the leather cut . . . . Shirts he had made at Charvet's in great numbers from carefully chosen material, and these were for years sent to Paris to be laundered." Eccentricity? No, for his procedures here belonged exactly to the central inspiration of his conduct of life, which the external mannerisms illustrate.

We get from this short book a vivid sketch of an interesting man; Halsted devoted wide learning to the advancement of the general good while adhering rigidly to individual conceptions. The description of his final illness and death after operation for gall-stones forms a very interesting chapter in which it will be seen that the probability of approaching death had no influence on the outlook of the patient.

Bell's Sale of Food and Drugs.

Eighth edition. By R. A. ROBINSON, Barrister-at-law, Chief Officer, Public Control Department, Middlesex County Council. London: Butterworth and Co. and Shaw and Sons. 1931. Pp. 299. 15*s*.

ENLARGED in scope, the eighth edition of Bell's Sale of Food and Drugs forms a reasonably complete text-book to the Parliamentary and departmental legislation relating not only to adulteration but also to such diverse matters as the use of preservatives and colouring matter, the special designations of milk, cow-keeping, and the conveyance and storage of milk, the sale of food by weight, the grading and marking of agricultural produce, and the indication of origin (under the Merchandise Marks Act of 1926) of imported food such as honey or raw tomatoes. These matters are neither simple in form nor easily found without guidance. Strong complaint was made, during a recent debate on the Expiring Laws Continuance Bill, of the inaccessibility of the Sale of Food Order, 1921; what survives of this relic of the food control period is printed in the volume under review. As for the form of the law, a long overdue step was taken when the Sale of Food and Drugs Acts were repealed and replaced by the consolidating Food and Drugs (Adulteration) Act of 1928. But no sooner had the structure been neatly renovated than an awkward patch was added by the Artificial Cream Act of 1929. The editor, Mr. R. A. Robinson, observes that Section 1 of the Artificial Cream Act apparently does not apply to articles of food like cream buns which do not "purport to be" cream though they may be thought to contain it. A similar doubt, officially expressed by the Department of Health for Scotland, was recorded in our columns (THE LANCET, 1929, i., 1271) after the passing of the Act. The point was raised recently on a test action brought against J. Lyons and Co. (reported in THE LANCET, 1930, ii., 821). The prosecution related to "cream sandwiches (vanilla filled)" and "Swiss rolls (chocolate sponge, cream filled)"; a case was stated to the Divisional Court whence the matter was sent back to the Swindon justices for a further statement. Parliament ought not to set such conundrums to manufacturer and consumer. Mr. Robinson, who has admirable qualifications for the task, has discharged his duty as editor of this work with judgment and thoroughness.

THE LANCET.

LONDON: SATURDAY, MARCH 14, 1931.

THE END OF STATUS LYMPHATICUS.

ONE of the great lessons to be learned in the post-mortem room is the determination of the body to go on living. There is seldom any cause to wonder why the person is dead; there is often reason to be amazed that he has lived till his organs have reached the stage of disorganisation which is revealed by dissection. The most elementary student realises how little lies between life and death for the normal healthy body, and how very seldom that little gives way and fails. Occasionally it does, and persons die in whose history and autopsy no adequate cause can be found. It goes a little against the grain with the expert pathologist to have to say that he can find nothing to account for death. The circumstances are often tragic, and it is simple humanity to search for some explanation which will satisfy the modern mind where the "visitation of God" would once have been enough. Hence the doctrine of "status lymphaticus" which, owing to our ignorance of the anatomy of the normal healthy human body, has survived longer than it should.

In January, 1926, the Medical Research Council and the Pathological Society of Great Britain and Ireland jointly formed a committee for the investigation of "status lymphaticus," and for the collection of information on a large scale on the weights and measurements of the thymus gland. An earlier inquiry, organised by the late Prof. EMRYS-ROBERTS, had resulted in the accumulation of a certain amount of material and the publication of an interim report,[1] but the number of records was too small to permit of any authoritative conclusions. A scheme was then initiated for the collection of a much larger mass of material. The special objects of the investigation were primarily (1) to establish by means of a large series of weights and measurements the standards of weight for age and proportion to body-weight of the normal thymus at all ages, and (2) to investigate closely the precise cause of death in persons dying suddenly from unexplained or trivial causes where the only apparent abnormality was the presence of a large thymus. A number of investigators were appointed in certain large centres of population, and special record cards issued. The cases in which information was specially desired were divided into two categories: (*a*) cases of sudden death in apparently healthy persons of any age, and (*b*) cases of death in persons of 15 years or over who had an apparently glandular thymus. After the inquiry had been in progress for some time, coroners began to cease ordering autopsies in ordinary street accident cases, with the result that there was a great reduction in the amount of available material. At the termination of the inquiry a total of 710 record cards had been collected by Dr. HOWEL EVANS, the secretary of the committee. Of these, 30 had to be discarded because they gave insufficient information, leaving 680 available for analysis.

A preliminary pathological scrutiny and classification of the material was undertaken by Prof. H. M. TURNBULL, and the final statistical analysis by Dr. MATTHEW YOUNG, both of whom were members of the "Status Lymphaticus" Committee. The value of the results obtained is enhanced by comparison at every stage with the figures of HAMMAR, BRATTON, and GREENWOOD and WOODS. The conclusions reached have now been published [2] and may be summarised as follows (the actual figures are given in a series of 15 tables). The average weights of the normal thymus shown for the several ages from one year upwards, and the mean percentage proportions of thymic weight to body-weight, may now be considered as well established within narrow limits since the new figures are in close agreement with those of other recent observers. The mean absolute weight of the thymus, and the mean ratio of thymic weight to body-weight at ages 0–1 year, sensibly exceed the corresponding values based on data published by GREENWOOD and WOODS and by BRATTON from the London Hospital, but the data are not numerically adequate to warrant any emphasis being laid on the differences observed. There is no evidence in the relatively few data available that acute diseases of short duration—i.e., under three days—reduce the average weight of the thymus to an appreciable degree. It emerges from this study that an abnormally large thymus *in itself* cannot be considered to be indicative of "status thymico-lymphaticus" when no obvious cause of death is found post mortem. In the series of *normal* cases under investigation a thymus which may be considered abnormally large for the age was found in 20 subjects, 10 of whom were under and 10 over 16 years of age, but of this number in only four, in which the death was attributed to anæsthesia or shock, can any special liability to death be assumed to have possibly existed or the cause of death be regarded as inadequately explained. It is impossible to judge the adequacy of anæsthetics or shock as causes of death because their effects cannot be measured in the dead body. The cases in which death was attributed to anæsthetics or shock are, therefore, most important and have been given in detail. Twenty-three such cases were studied. Of the four in which the thymus can be considered to be abnormally large for the age, in one a major operation had been performed, in one purulent bronchitis, dilatation of the right ventricle, and hypertrophy of the left ventricle were noted at necropsy, and in the other two the conditions were apparently similar to those in other cases in which the thymus was not unusually large. In the normal series of cases at ages 0–16 years there appears to be little, if any, association between the weight of the thymus and the amount of lymphoid tissue in the various parts of the body, in so far as this amount can be

[1] Jour. Path. and Bact., 1925, xxviii., 132.

[2] Ibid., 1931, xxxiv., 213.

indicated by volumetric measurements of the faucial and lingual tonsils, selected lymph glands from certain sites, Peyer's patches, &c. There is no definite evidence in the relatively few data available of any concomitant general hyperplasia of lymphoid structures in cases with an abnormally large thymus. The amounts of lymphoid tissue in the several parts of the body, in so far as they can be considered to be represented by the selected criteria, seem to show practically no association with one another to which any significance can be attached.

In a series of subjects with Graves's disease there is evidence that the average gross weight of the thymus is distinctly above the normal, thus providing confirmation of what is more or less general opinion based on naked-eye observation that the thymus appears to be almost invariably abnormally large in this affection. Though the data available do not warrant any definite conclusions, they suggest strongly that the percentage proportion of glandular tissue in the thymus is above normal, but that there is no definite general hyperplasia of lymphoid structures in this affection. There is no evidence in the series examined of an association between arterial hyperplasia and an abnormally large thymus. In the opinion of the committee the facts elicited in the present inquiry are in harmony with those of HAMMAR, and GREENWOOD and WOODS, in affording no evidence that so-called "status thymico-lymphaticus" has any existence as a pathological entity. It appears, therefore, that we have to accept the fact that a few people, especially children, die when we cannot see why they should. If there is an inherent constitutional vice in some persons which makes their response to an anæsthetic dangerous to life, it is certainly not represented by the state of their thymus and lymphatic glands. The personal defect may be discoverable; on the other hand, it may not exist. Children have had far less opportunities than adults of training themselves to meet the changes and chances of life; perhaps it is natural that their bodies should stop working more easily.

HEGI'S FLORA.

THE index-volume of the great Illustrated Flora of Central Europe has just reached us, completing a work[1] of almost unexampled collaboration between author and publisher which has taken 25 years to complete and has cost over £50,000 to produce. The Flora may commend itself to the medical reader for a number of reasons. The publisher tells us that it was his success with illustrated medical atlases which induced him to embark on his plan of an illustrated flora, and he had the sagacity to choose the curator of the Munich Botanical Garden to help him in realising his scheme. Prof. GUSTAV HEGI was then only 30 years old and has become middle-aged before his work was finished. He has himself written two-thirds of the 7800 pages, supplied nearly all the 5000 illustrations in the text, and read three times the galley proofs of the 13 volumes which his publisher has called, with some bitterness, the unending tapeworm. And with some reason, for the first conception of the book was in one volume with a hundred coloured plates, and the prospectus issued in 1906 invited subscriptions for three volumes in 70 instalments with 280 plates. But the LEHMANNS did not then reckon with their author. Whenever, he complained, he was just in fine fettle to describe a plant, he had to leave off for want of space, and soon he was no longer content with a mere description of the plant but wandered off into the circumstances of its growth, its habits of life and minute structure, its particular significance in the life of animals or human beings, its place in folk-lore, in pharmacy, in medicine, in literature. After having dealt with all of these he would run on to consider the good or harm which it might produce; finally he forgot the limitation imposed in the title and brought in the related plants of other countries outside Europe. When the first volume was ready it was already clear that at least six would be needed, and LEHMANNS had to break their troth with the 5000 original subscribers who knew nothing of the mentality of the Munich curator but who were fortunately for the most part confirmed lovers of flowers and were reconciled to further outlay. No concession, however, satisfied Dr. HEGI and gradually the three volumes became 13. Even the war did not slacken his pen and publication was continued as long as paper lasted out, but when it failed there was a gap until 1923 when many of the original subscribers were dead or missing and the fifth volume could only be delivered to 1800 of them. The position seemed almost hopeless but gradually many of them turned up again, fresh subscribers were found, and a new volume was issued each year. The story is the joyful conquest of form and principle by an author who was so seized with the absorbing interest of his work that he saw and admitted no difficulties. It should rank as a leading case in the historic conflict between author and publisher.

For one particular feature of the work the present generation has especial reason to thank Dr. HEGI. This is the almost numberless series of photographs of trees, shrubs, and flowering plants in their native haunts, showing the characteristic grouping of members of widely differing natural orders. It were indeed greatly to be desired that something of the same kind should be available in this country where, with the increase of population and the steady outgrowth of the garden village, many of the sights familiar to naturalists of an earlier generation are becoming lost. We may still have access in herbaria at Kew or elsewhere to dried specimens of our sometime rich flora, and the pages of SOWERBY, HOOKER, and BENTHAM will recall the individual features of plants which have become rare or extinct, but many of us would like to have some permanent record of the fritillary and wild

[1] Illustrierte Flora von Mittel-Europa. By Dr. phil. Gustav Hegi, sometime professor in the University of Munich. Part VII. General Index. Munich: J. F. Lehmanns Verlag. 1931. Pp. 562. RM. 31. Price of the whole work in 13 volumes RM. 450. The 280 plates separately without text in a portfolio RM. 80.

tulip as they could be seen growing at one time in the Thames valley, of the fly and spider orchises along the crests of the chalk hills, and even of the blue rampion growing close up to the racecourse on Epsom Downs, not to forget the patch of Cornish heath that used to flourish in the middle of a common within a ten-mile radius of Charing Cross. There is hardly a page of HEGI'S Flora which will not recall to someone a familiar scene of country life. The book should be accessible for reference in every museum and school library. No naturalist's shelf would be quite complete without it.

ACCESSORIES TO ANÆSTHETICS.

THE laudable desire to rob the entry into unconsciousness of those fears and discomforts and excitements which so commonly accompanied the inhalation of anæsthetics in the past has led to the use of a number of drugs. Their very number suggests that no one of them answers all requirements. Nor is this supposition refuted, we gather, by the opinions of many of those best qualified to speak. For some years now it has been a common practice to precede the actual anæsthetic by a hypodermic injection. This usually consisted of a small dose of morphia with atropine. There were always, however, some, whose opinion demands respect, who were against even this simple preliminary. More emphatically did they object to the addition of scopolamine to the preliminary drugs, and they generally preferred to avoid even atropine alone. The logical basis of these objections was that these hypodermically injected drugs lowered the excretory activities of the body and interfered with due elimination of the anæsthetic, depressed respiratory activity, and increased the chance of abdominal distension after operation. The force of these contentions has to-day largely been dissipated by the use of gaseous anæsthetics in place of long administrations of ether and chloroform. Nevertheless it is obvious that the routine use of preliminary drugs is not an unmixed blessing and requires more care and consideration than is always bestowed upon it. This is even more certain with regard to the latest recruits to the great army of premedication agents than it is with regard to those which were widely employed hitherto. The rapid action, the freedom from unpleasantness, and the amnesia which accompany the use of sodium amytal and of nembutal must not blind us to certain undesirable symptoms often resulting from the use of these drugs. There is at the moment, it seems to us, an enthusiastic recommendation of the barbituric compounds for use before anæsthesia which too completely disregards the possible dangers inherent in that use.

Mention was made of these risks at the Anæsthetic Section of the Royal Society of Medicine reported in another column. Attention, too, was firmly directed to this side of the question by Sir WILLIAM WILLCOX at the Medical Society (THE LANCET, Feb. 14th, p. 354). It is perhaps particularly in association with the use of these drugs in midwifery that caution is needed. For at present there is afoot an intensive propaganda in favour of anæsthesia for all patients in labour, and there is some danger that an easily administered and potent drug may be pushed into indiscriminate use before we are sufficiently well acquainted with all the effects that it can produce. We are, of course, not for a moment suggesting that we disapprove of anæsthesia in labour generally speaking. On the contrary, we believe that it should always be available, to an extent that has not held in the past, whenever the medical man in charge finds it desirable. And this no doubt means in the vast majority of cases at some period or another. What we do wish to avoid is a premature impression that painless labour can be easily and safely secured in all cases by a dose of sodium amytal or of nembutal given in sufficient quantity early enough in labour. Experience hitherto, it seems to us, does not yet warrant that conclusion. Sometimes the results are all that could be wished. At others there is an amount of restlessness that would never be permitted with an ordinary anæsthetic. Both for midwifery and for surgery the latest barbiturates should be regarded, we feel sure, as still on their trial. We doubt whether the enthusiasm for them now exhibited in some quarters will be still prevalent in March, 1932.

THE OUT-PATIENT QUEUE.

THE least satisfactory feature about our hospitals is the out-patient departments. Instead of being centres for consultation on unusual or intractable cases, they have developed into places crowded with patients chronically ill whose supply of their favourite mixture has run out. This is not to imply either that the mixture is merely a placebo, or that the patient does not need periodical medical observation, but only that the out-patient department of a hospital is not the place to give it. The gain to all parties—hospitals, honorary staff, patients, and even students—from a drastic restriction of the numbers attending would be generally admitted, and only the mechanism by which it could be achieved requires discussion. Some reformers, whose views we outlined last week, would begin by restricting the clinics to those with a letter or at least a form signed by a family practitioner, a panel doctor, or the casualty officer of the hospital. This might lead to an outcry among subscribers to contributory schemes, but they could, we believe, be convinced that no hardship need ensue. The discretion of casualty officers, with the coöperation of hospital almoners, might be relied on to ensure that patients who have no practitioner to fall back on shall not be deprived of hospital treatment. In any case, as Dr. FRIEL points out elsewhere in this issue, it is only by restriction of numbers that hospitals can avoid the waste of time which is enjoyed only by the worst type of hospital "chronic." The appointment system has been tried with success at King George Hospital, Ilford. Here the arrangement of attendances

by porters is entirely eliminated. The doctor—or the casualty officer—fills up a form asking that an appointment shall be made, and the patients are given times at intervals of half an hour in the medical out-patient department, 20 minutes in the gynæcological department, 10 minutes in the ear, nose and throat department, and so on. Members of the honorary staff are informed by telephone on the previous day of the number of appointments made on their behalf. This particular scheme implies such restriction in numbers as would not be practicable in a big town, but a system of booking in batches is proving successful at the Manchester Jewish Hospital, and is long overdue elsewhere. There can be no valid excuse for insisting on the personal attendance, for example, of 50 patients at 1.30 P.M. when the medical officers are not due until 2, and will not have got through their work till 5. Even without drastic revision of the present system it would surely be possible to number the seats in the department and to issue half-hourly time cards, allowing for a reasonable wastage. At present the custom of seeing first those patients who hold in their hands a personal letter from a doctor leads to the abuse of such passports to early attention. Experienced wanglers often demand letters, frankly as time-savers, from medical men who have never attended them professionally. Hospital authorities are perhaps unaware how bitterly they are criticised for the lack of consideration shown to out-patients, and how much opposition has to be overcome before a conscientious employee or housewife is persuaded to attend a hospital out-patient department.

ANNOTATIONS

INTERNATIONAL QUARANTINE.

FROM the Permanent Committee of the Office International d'Hygiène Publique we have received a summary of the proceedings at the last session, which was held in Paris in October, 1930. The summary shows the wide range of subjects dealt with as well as the practical nature of the questions which come up for consideration. Among these some of the most important are reported upon under the common heading of "Ships Doctors," and have reference to the prevention of the spread of disease by sea-routes, and to the need of an adequate standard of medical service on board ship by which early diagnosis and intelligent treatment can be secured. Proposals are still under consideration for the abolition of bills of health, a measure which is in accordance with the recommendations of Article 49 of the International Sanitary Convention, and an agreement for this purpose will probably be shortly concluded between several countries, at any rate in relation to their European ports. There will be differences of opinion as to the policy here of the International body, so that the confining of the change to European ports may be politic. For many people the bill of health is the most important of the documents carried by a sea-going vessel, an aspect of the matter that is fully set out in a memorandum from Dr. Gilbert Brooke, now the Chief Medical Officer of Sarawak, which will be found on page 606 of our present issue.

An interesting expression of opinion comes from the Permanent Committee on notification of cessation of infection in an area previously affected. Unless a country has sent the proper notification, other countries are not obliged to cease the application to that country of the provisions indicated in the Convention; on the other hand, such a notification is only possible and admissible with regard to an area in which the disease in question is not normally present from year to year. In any case notification should not be made, even under the terms of Article 12 of the International Sanitary Convention of 1926, unless the country concerned is honestly convinced that arrivals from its territory are no longer dangerous. This conviction should obviously not be based on theoretical data but on all available information showing the actual condition of the locality. This seems a very sensible procedure, under which the absence of plague for a period from a country would not warrant any security, unless investigations with reference to rats had been carried out for a reasonable period. Observations by sanitary maritime authorities and ship-owners are referred to in the Bulletin as showing that the system of international sanitary administration indicated in Article 28 of the Convention (periodical deratisation of ships) has been justified by results, one proof adduced being the increasing number of certificates of exemption issued by Great Britain during the first three quarters of the year. There is no doubt that the system must be applied in a reasonable manner, without losing sight of the fact that it concerns not only ships infected with, or suspected of, plague, but *all* ships, and that it is not intended to suppress a present danger, but as a measure of general precaution to reduce the possibility of such a danger. The Committee, by making a special study of such questions, and by insistence, as far as possible, on a uniform model of certificates, is advancing the methods of international quarantine.

TISSUE REPAIR AND BODILY REACTION.

THE influence of the "soil" upon the processes of inflammation and repair is so important that in this direction we may hope for perhaps the greatest advances in the prevention and cure of infective diseases. In inflammation the reactions of the host to the infecting organism are at least as important as the virulence of the organism. Efforts to modify the milieu in which an infecting organism gains a foothold or in which disease develops are as much the basis of treatment as are efforts to destroy the infecting agents (when these exist and are known). Among the least understood of the factors which make a person relatively liable to certain disorders are the constitutional tendencies called diatheses. Modern medicine tends more and more to emphasise the importance of the constitutional factor and possibly we may one day be able to detect subtle changes, chemical or physical, in the blood or tissues of patients, which may be an expression of their diathesis. A posthumous monograph[1] by Prof. Rudolf Balint, of Budapest (with Stefan Weiss), containing the results of his researches upon the growth of tissues and the

[1] Gewebsproliferation und Säurebasengleichgewicht. By R. Balint und S. Weiss. Berlin: Julius Springer. 1930. Pathologie und Klinik in Einzeldarstellungen.

acid-base equilibrium, leads to speculation on the influence of blood and tissue acidity upon vital processes. At the site of inflammation there is a local "acidosis" due to the tissue breakdown and associated with local vaso-dilatation, raised osmotic pressure, increased heat, and the other changes of acute inflammation. The reparative phase, however, according to Balint's theory, takes place more rapidly and completely in an alkaline medium. In spite of much evidence indicating that the acid reaction may itself be the stimulus to new tissue formation, Balint and Weiss bring forward experiments to show that in fact repair is more satisfactory in alkaline surroundings. This theory arose from the work of Balint who suggested that peptic ulceration is associated with an acid reaction of the patient as a whole, constitutionally. He brought forward evidence that the poor healing power of ulcer patients was associated with abnormal acidity of their blood and tissues. Although the changes of pH that Balint recorded were very small, and this work has been seriously criticised, he suggests that small variations are capable of a profound influence over the proliferative processes of tissue repair. In the present monograph numerous experiments are described which the authors consider point to the conclusion that an acid reaction checks, while an alkaline stimulates, "all types of tissue proliferation"; such changes of reaction as may occur in life they consider active in this respect. The observations cover experimental tuberculosis in animals, growth of carcinoma cells, calcification of bone, "sterile inflammations," growth of tissues in culture, and other similar tissue formations. Much of the work must impress the reader (though not all will do so equally), and the subject is of such great importance and promise that all will regret the loss to medicine by Prof. Balint's death.

THE MEDICAL AND DENTAL REGISTERS.

A COMPARISON of the Medical Register dated 1931 with that dated 1930 suggests an uneventful year. The number of names on the register increased by 421 compared with an increment of 534 in the preceding year, and an average of 1094 in the preceding decade; the smallness of the figure is partly due to a rather large number of deaths and a vigilant purging of the list. During the year 1490 names were added by registration—768 in England, 350 in Scotland, 165 in Ireland, 191 in the Colonial and 17 in the Foreign list; 36 names were restored to the register; 1105 names were removed—887 on evidence of death, 214 whose address could not be ascertained, and 4 after disciplinary action. The total number of names is 55,291, of whom 48 per cent. were originally registered in England, 31 in Scotland, and 14 in Ireland, leaving 6 per cent. for the Colonial list. There is no change in the table showing the degrees registrable in this list, except an asterisk to the heading India, stating that degrees of all Indian Universities granted subsequent to Feb. 24th, 1930, are not registrable. All the 17 names added to the Foreign list are those of Italian medical graduates who qualified at nine different universities in the years given in parentheses—viz., Bologna (1928), Genoa (1922, 26, 26, 28, 28), Messina (1926), Milan (1928), Modena (1925, 26), Naples (1927, 27), Padua (1923, 27), Palermo (1924), Parma (1904, 18). There were 1792 medical students registered in 1930, being 290 more than in 1929, and a higher figure than any since 1922. The Dentists Register, which reaches us at the same time, contains 14,422 names, being an increase of 41 on the previous year's total. There were 280 new names on the British list—of which 253 were registered with qualifications—2 on the Colonial, and 1 on the Foreign list; 146 names were removed on evidence of death. The discrepancy is chiefly due to the adjustment between names restored and removed on technical grounds. It is noteworthy that the total number of those practising dentistry has scarcely altered during the last five years. There were 306 dental students registered in 1930, being 8 more than in 1929, and (as is the case with medical students) a higher figure than any since 1922, but obviously an entry inadequate to make good the wastage.

ERYTHEMA NODOSUM AND TUBERCULOSIS.

THE two latest studies of erythema nodosum lead their authors to discordant conclusions. Dr. Axel Cedercreutz [1] has inquired into the fate of the patients in his private and hospital practice who before 1910 had suffered from erythema nodosum or erythema exudativum multiforme. Twenty-six of the 63 patients suffering from erythema nodosum were traced, and nine were found to have died; but only two of the deaths were due to pulmonary tuberculosis. It should be noted incidentally that the subsequent death-rate from pulmonary tuberculosis among the 78 cases of erythema exudativum multiforme was also low (five out of 36 patients traced). Very different are the conclusions to which Dr. H. d'U. A. Engelsgaard [2] comes in an investigation of the patients admitted to the Lyster public sanatorium in Norway from 1914 to 1929, who gave a history of erythema nodosum, diagnosed as such by a medical practitioner. There were 155 such patients, of whom as many as 124 were women. In 82 cases (53 per cent.) there was a history of tuberculosis in some other member of the family; and in most of these cases erythema nodosum appeared at a time when this other member of the family had either just died of tuberculosis or was invalided by it. What was even more significant was the brevity of the interval in many cases between the appearance of the erythema nodosum and of the first signs indicative of tuberculosis. In as many as 55 cases this interval was less than three months, and in 75 cases, or nearly half the total, it was less than a year. Had pleurisy been accepted as a sign of pulmonary tuberculosis, an even closer time relationship would have been established between the erythema nodosum and the first signs of tuberculosis.

PROVINCIAL HOSPITALS AND PATHOLOGICAL RESEARCH.

A FORTNIGHT ago Lord Dawson formally opened a new pathological block that has been added to the Sunderland Royal Infirmary. The cost has been £7000—not an extravagant sum for a completely equipped department which necessarily undertakes work of great variety, complexity, and scientific delicacy. Sunderland by no means stands alone among provincial hospitals in the possession of similar facilities for research, but there is still wide scope and urgent need for their extension, and the authorities of the hospital well deserved the praise Lord Dawson gave them for their courage in spending money in this way at a time when their area is suffering severely from industrial depression. He laid stress upon the rapidly growing importance of the scientific side of hospital work—an importance as yet very imperfectly appreciated by the general public—and

[1] Finska läkaresällsk. handl., January, 1931.
[2] Tidssk. for den Norske laegeforening, Dec. 1st, 1930.

spoke a courageous word about that prejudice against post-mortems which only too often stands in the way of the complete investigation of disease. While emphasising the absolute necessity, in the changed conditions of hospital service, of careful coördination between the local authorities and the voluntary institutions, Lord Dawson uttered a useful word of warning. Coördination is, no doubt, a blessed word, but it must be practised by the right people in the right way, and the authority responsible for the smooth and effective running of the new system must comprise "people with the necessary skilled knowledge" that "flexibility and promptness in administration" may be assured. Regional hospital service, if the most and best is to be made of it, will involve the pooling of scientific knowledge and the results of specialised research to an extent to which many of the provincial hospitals are as yet unaccustomed. The number of medical schools must always be comparatively restricted, but every hospital of any importance will be compelled in the near future to be, within limits, a centre of investigation in all that is comprised in the word pathology. Not otherwise can they hope to deal knowledgeably with the vast increase of difficult and specialised work which the changed conditions of the time are forcing upon them.

DIPHTHERIA IN BERLIN.

THE extraordinarily severe epidemic of diphtheria which has recently occurred in Berlin and the high case mortality in spite of large doses of antitoxin given at an early stage of the disease led to an animated debate last month [1] at the Berlin Medical Society on the efficacy of diphtheria antitoxin and active immunisation, in which Profs. Friedberger, Königsberger, Friedemann, Jürgens, and von Drigalski, among others, took part. Friedberger maintained that the remarkably favourable results that followed the introduction of antitoxin in the 'nineties of last century were really due to a natural decline in the severity of the disease. As the result of a study of a large series of European and American statistics he had come to the conclusion that the diphtheria curve had been in no way affected by the introduction of antitoxin. He therefore suggested that a greater use than hitherto should be made of non-specific therapy, as in the case of gonorrhœa, syphilis, and a number of other diseases whose causal organisms were well known. As regards active immunisation against diphtheria, Friedberger was also convinced that its introduction had not caused any change in the occurrence of epidemics, and that all the statistics as to its success, which mainly emanated from American sources, were based on the erroneous conclusion that the decline in the incidence of diphtheria was due to immunisation, whereas the immunisation was being carried out when the disease was already showing a tendency to abate. Königsberger, while admitting the excellent results obtained by Bie at Copenhagen from the use of very large doses of antitoxin—e.g., 100,000–120,000 units intravenously and 500,000–800,000 intramuscularly—was not convinced that such high doses were entirely responsible for the good results. Friedemann, who had also had an opportunity of observing the Danish cases, urged that only carbolic-free antitoxin should be used as in Denmark for intravenous injection. He had invariably found that the malignant cases showed a serous meningitis and that after lumbar puncture there was always a decline in the cerebral symptoms, though he would not go so far as to say that lumbar puncture lowered the fatality-rate. Jürgens emphasised the importance of early administration of antitoxin and of not delaying this treatment until a bacteriological report had been received. As regards the value of immunisation he drew attention to the fact that antitoxin had never been found in the blood of diphtheria convalescents or in cases of diphtheria after death. There was therefore, in his opinion, no certain proof of the value of immunisation against diphtheria. On the strength of his observations during a recent visit to America von Drigalski declared that American statistics concerning immunisation were not so untrustworthy as Friedberger had maintained. Moreover, a comparison of the diphtheria morbidity in Berlin among the immunised and non-immunised had convinced him that a large number of children had been completely protected and that at least 40 children's lives had been saved.

[1] Medizinische Welt, Feb. 14th, p. 241.

OPERATIVE TREATMENT OF PILES.

A MODIFIED clamp-and-cautery operation described by D. Warshaw [1] resembles the classical operation except that the coagulation is carried out by diathermy, a monopolar current being recommended. Evidently Warshaw does not hesitate to include external piles in the clamp as well as internal, and this is a departure from the usual practice, for with the ordinary clamp-and-cautery method there is usually much pain and external œdema if skin is included and cauterised. He does not seem to be concerned about this, however, and in a series of 200 cases he has had good results. The routine of preparation is very simple; a cathartic is given on the night before operation and a sodium bicarbonate enema two hours before operation if there is chronic constipation. The patient is kept in bed for only two days and is usually able to return to work on the fourth day. This seems rapid work, for the average period of hospitalisation in this country after hæmorrhoidectomy is 12 days. Warshaw advocates operation under sacral anæsthesia, but the general experience of this is that it is unreliable, with probably 20 per cent. of failures. The objections that might be advanced against his method are that it takes a long time (15 to 30 minutes) and that there is a risk of the diathermy burn extending into the tissues deep to the clamp. On the other hand the rapid convalescence should be a great gain to the patient.

W. L. Secor [2] commends the modified excision-and-suture operation. His disapproval of the injection method is somewhat surprising, for it is now being used in most rectal clinics, and the injection of phenol in oil is widely practised and found effective. Every rectal surgeon will agree with him, however, that radical operation should be advised when, as a result of thrombosis, internal piles have become transformed into fibrous piles or polypi. The method he advocates is a modification of the excision and suture operation commonly known as Earle's. He recommends a special fenestrated clamp which makes it possible to crush the hæmorrhoid proximally to the suture line, and in this respect it should be an improvement on the simple forceps of the Spencer Wells type which is generally used. It is doubtful if Secor's idea of this clamp sealing the veins and making ascending infection impossible is accurate, but in any case the danger of transfixion of a vein with ascending infection and portal pyæmia, on which he lays much stress, is extremely remote. The method of excision and suture has never been popular in this country, the feeling being that a simple method, such as the

[1] Amer. Jour. Surg., 1931, xi., 45. [2] Ibid., 1930, x., 344.

ligature operation, is preferable to any which involves elaborate suturing.

The methods of both Warshaw and Secor, if properly carried out, are efficient in practice and might well be tried by surgeons who, although well satisfied with their usual operation, have no objection to testing an alternative method. It is very clear that this branch of surgery demands much care and attention to detail in the preparation and after-treatment, as well as at operation itself.

CENTENARY OF THE BRITISH MEDICAL ASSOCIATION.

ARRANGEMENTS are now being made to celebrate the hundredth anniversary of the British Medical Association at its annual meeting in London next year. Lord Dawson has accepted the presidency and a large attendance of members and guests from overseas is expected. Outstanding events of the meeting will be a pilgrimage to Worcester, where the Association was founded, and the unveiling of a memorial to Sir Charles Hastings on July 24th. The president will give his address in the Queen's Hall on the 26th, and this will be followed by a reception in the Albert Hall, where there will be accommodation for 5000 or 6000. The centenary dinner will be in the same place, and arrangements are being made for 2000 diners. The scientific sections are meeting in the South Kensington buildings of the University of London from July 27th to 29th, and it is hoped that the contributors will be widely representative of medicine at home and abroad. The honorary organising secretaries of the centenary meeting are Dr. E. A. Worley and Dr. H. Gardiner-Hill.

This year the annual meeting of the Association is to be at Eastbourne under the presidency of Dr. W. G. Willoughby, the medical officer of health. The sections meet from July 22nd to 24th.

VITAL STATISTICS IN THE TROPICS.

IT is no exaggeration to say that the vital statistics available from many of our tropical dependencies are valueless as such. The difficulties of administration in large native territories, the absence of encouragement on the part of central authorities, the lack of interest on the part of medical officers, are all probably contributing factors. Yet in civilised countries vital statistical records are recognised as essential adjuncts of public health work as evidence both of the success of such work and the directions in which further preventive measures are required. Their value in the tropics can, at the least, be no less. That such records of considerable accuracy and value could, and should, by degrees be obtained was very ably argued by Major Granville Edge in a paper on the Scope and Uses of Vital Records in the Tropics, read on March 5th before a joint meeting of the Sections of Epidemiology and Tropical Medicine of the Royal Society of Medicine.

It is a case in which the best may be the enemy of the good. It is obviously impossible to transplant immediately to the tropics the highly intricate systems of recording vital statistics that have slowly developed in cooler and more civilised countries. But this must not be used as an argument against the adoption of less intricate means. Major Edge puts forward the suggestion that, as a beginning, small scale inquiries should be persistently and regularly made, strictly limited in their scope and confined, perhaps, at first to particular tribes, villages, or even to selected families. Within these limitations he believes it would be possible to obtain accurate population figures by sex and civil state, and approximate ages, births and infant mortality-rates, death-rates and their causal and seasonal variations. By such means, too, the native peoples would become familiar with the details such inquiries entail, the frequent visits of officials come to be regarded as matters of mere routine, and any suspicions aroused during the early stages would gradually disappear. It would be only a matter of time before the area and scope could be extended. The investigation must be made by a worker completely versed in the habits and belief of the natives or, as one of the contributors to the discussion graphically said, "one false move on the part of the medical officer and his demographic unit will disappear into the bush." But to say that any such inquiry is impossible is merely to invite Major Edge's retort that it *has been done*—by the Dutch. In such publications as the Proceedings (Tropical Section) of the Koninklijke Vereeniging Koloniaal Instituut Amsterdam, the *Geneeskundig Tijdschrift voor Nederlandsch-Indie*, and the *Mededeelingen* of the Pathological Laboratory of Medan (Sumatra) there is to be found a wide range of epidemiological studies discussing a variety of health problems peculiar to the tropics, and presenting in great detail data relating to the mortality and morbidity of both European and native people. It is difficult to believe that the difficulties in tropical countries are any greater than were the difficulties with which workers in Europe had to contend 200 years ago. Yet, as Prof. Major Greenwood suggested in the discussion, John Graunt, a London linen-draper, living 280 years ago, discovered by admittedly *crude* methods a very great deal about the causes of death, perhaps more than any medical officer of health in the tropics has yet done. Gross errors were made then and gross errors will be made in the tropics, but unless some such small sampling inquiries are attempted, and interest is taken in them by superior officers, no progress will ever be achieved. It was Prof. W. W. Jameson's view that more interest will be taken in such work in the future; that up till now there has been no tradition in the colonies, such as exists in this country, for the medical officer of health to concern himself in matters of vital registration; that this, in process of time, will change. At present, as Major Edge pointed out, in the absence of reliable statistics, the effects of civilising influences upon native health must remain largely conjectural.

EXEMPTED HEROIN PREPARATIONS.

WHEN the Geneva Convention was ratified in 1928 the section of the Dangerous Drugs Act, 1923, which gave power to add all preparations of diamorphine to Part III of the Act of 1920, came into operation. The Pharmaceutical Society of Great Britain however approached the Home Office with a request that certain preparations should be exempt from the Act. We have received from the Home Office a copy of an Order—The Dangerous Drugs (Consolidated) Amendment Regulations, 1931—from which it is seen that this request has now been granted. The delay was due to the fact that it was necessary for the application to be approved in succession by a Committee in Paris, passed on to the Opium Advisory Committee, and the Council of the League of Nations. This process having been completed, and confirmation obtained from the League, the Home Office was duly authorised to promulgate the Order. In anticipation of the publication of the new regulations, and by arrangement with the Home Office, the formulæ of the five exempted preparations have been published

as a supplement to the British Pharmaceutical Codex. The preparations are as follows :—

1. Elixir diamorphinae et terpini cum apomorphina.
2. Linctus diamorphinae camphoratus.
3. Linctus diamorphinae cum ipecacuanha.
4. Linctus diamorphinae et scillae.
5. Linctus diamorphinae et thymi.

In the case of each formula the proportion of diamorphine hydrochloride is grs. 4 to 20 fluid oz. of the preparation, or 0·046 per cent. In the first and last of the two formulæ there is also grs. 5 of apomorphine hydrocholoride to 20 oz. of the preparation, or 0·057 per cent. The maximum dose in each case is a fluid drachm, and thus the amount of diamorphine hydrochloride in a maximum dose is one-fortieth of a grain. It may be added that these preparations are free from the restrictions which apply to all other preparations of heroin.

MACLOGHLIN SCHOLARSHIPS FOR MEDICAL STUDENTS.

By the will of Mrs. Eliza Macloghlin, who died in May, 1928, money was left to the Royal College of Surgeons of England for the endowment of scholarships in memory of her husband, the late Dr. E. P. P. Macloghlin, formerly in practice at Wigan. One scholarship, of about £100 per annum and tenable for five years, is to be awarded annually in July, to a male student between 16 and 22 years of age, whose means would otherwise be insufficient to cover the cost of medical education. In 1930, at the first competition for these scholarships, there were five candidates, and it is stated that for the next award forms of petition, appropriately filled up, must reach the secretary of the College not later than June 1st. They must be accompanied by a certificate of having passed a preliminary examination in general education recognised by the Conjoint Examining Board for admission to its pre-medical examination. Candidates for the scholarship will be required to sit for Part I. of this examination (chemistry and physics) on June 30th, and the scholarship will be awarded to the successful candidate obtaining most marks. Further information may be had from the secretary of the College, Lincoln's Inn Fields, London, W.C. 2.

SECONDARY EFFECTS OF REPEATED ENEMATA.

Enemas have been used for centuries in the treatment of constipation and affections of the bowel. Two results have been sought from their use. It is sometimes required to stimulate the bowel wall to contract forcibly and so expel the hardened contents, as in the clearing enema. This depends for its action on the introduction of slightly irritating substances under pressure so that the bowel contracts because of its resistance and elasticity and because of its response to chemical stimulation. In other cases the object is to soothe the lining membrane by washing away mucus and irritating debris. With this in view bland solutions are injected slowly and under low pressure, so that the fluid may percolate by gravity into the higher portions of the colon. This form of treatment is usually distinguished as intestinal douching, or Plombières treatment.

The repeated use of enemas, if long enough continued, may possibly produce distension and consequent weakness of the muscle of the intestinal wall and irritation of the sphincter, so that a vicious circle develops and the bowel can only be evacuated by continuing the enema habit. More immediate, however, is the possibility of irritation of the mucous membrane leading to inflammatory changes. J. Friedenwald and M. Feldman [1] have studied the latter effect by giving daily enemas to dogs. Various materials were injected, and in some experiments much inflammation and even ulceration of the mucous membrane was noted. After long periods of daily injection of enemas of plain water, soap-suds, or cotton-seed oil, little effect was observed in the mucous membrane except small areas of congestion. Proctitis, however, and ulceration of the colon have been seen in man after soap-sud enemata. Weak solutions of acriflavine and camphor water have no apparent local effect on the bowel, but irrigation with irritating chemicals such as sodium carbonate, ammonium chloride, and hydrochloric acid, even in weak solution, causes inflammatory changes ranging from mild hyperæmia to extensive ulceration and necrosis. Friedenwald and Feldman therefore offer a warning against the indiscriminate employment of enemas and the use of irritating ingredients. The object of this form of treatment should be to re-educate the normal habit of evacuation and to allay inflammation of the colon and rectum.

[1] Amer. Jour. Surg., 1931, n.s., xi., 23.

THE ELUSIVE ETHER.

A remarkable correspondence in recent issues of *Nature* seems to have sounded the knell of the reality and substantiality of the luminiferous ether which was, in Kelvin's words, "the one thing we are sure of in dynamics." Far from being a fantastic creation of the speculative philosopher, it was set before the British Association meeting at Winnipeg in 1909 as something as essential to us as the air we breathe. But two years ago Sir Arthur Eddington told us that among the leading scientists of to-day about one-half assert that the ether exists and the other half deny its existence. As a matter of fact, he added, both parties mean exactly the same thing; they are divided only by words. Prof. Muirhead remarks in his letter to *Nature* that before there can be any talk of existence you must define the world within which the existence of anything is affirmed—what logicians call the universe of discourse. And in a final letter Sir James Jeans deals with the conception of ether in three different universes: first, the universe of the astronomical observatory and the physical laboratory which is continuous with the world of the felt waking body; secondly, the mathematical universe of discourse which deals only with such phenomena as can be reduced to pointer readings; and thirdly, the world of values. In brief, Jeans contends that in the physical world the ether is non-existent, in the mathematical world it comes into being at the beck and call of the mathematician, in the world of values it is meaningless.

The Harveian lecture of the Harveian Society of London will be given by Sir Percy Sargent at 11, Chandos-street, W., at 8.30 P.M. next Thursday, March 19th. His subject will be the Romance of the Pituitary Gland, and the meeting will be open to members of the medical profession.

The Secretary of State for Scotland has appointed Mr. D. P. D. Wilkie, Professor of Surgery in the University of Edinburgh, to be a member of the Scientific Advisory Committee on Medical Administration and Investigation.

We regret to learn the death of Prof. David Hepburn, Emeritus Professor of Anatomy at University College, Cardiff, and for five years a member of the General Medical Council.

A POST-GRADUATE COURSE

MOTIVES AND MECHANISMS OF THE MIND.*

X.—GUILT AND INFERIORITY.

B.—Inferiority.

THE CAUSES OF INFERIORITY.

The causes of inferiority feeling are also extremely important, and may be classified more fully than has been attempted in the case of fear and guilt:—

1. Hereditary. 2. Acquired: (*a*) Infantile, (*b*) circumstantial, (*c*) organic; (1) conscious, (2) unconscious.

HEREDITARY CAUSES.

It is perhaps unnecessary again to stress the hereditary factor as being responsible in the first place for the feeling of inferiority. For example, it was pointed out in Lecture VIII. that women in general are liable to be born with a tendency towards inferiority feeling, owing to the repetitive and summative effects of past racial experience upon their sex. Inferiority feeling, however, is common enough in both sexes, as an inborn tendency, for reasons partly associated with imago reactions and partly due to the causes set out below.

ACQUIRED CAUSES.

(*a*) *Infantile.*—The crude way in which the unconscious, or primitive feeling side of life, measures its experience has already been mentioned. The infant is born, small and weak, into a world which is relatively large and strong, and the first feeling pattern which is stamped upon its impressionable senses is one of *relative inferiority*. This primary inferiority is something which should be grown out of, but, being the first impression at a most impressionable age, it is by no means an easy matter to do so. Inferiority is unconsciously measured in terms of years, stature, and strength, and it is many years before these have grown to such a degree as to give the individual a feeling of relative adequacy. The tendency, therefore, is for the first impression of inferiority to remain to a large extent unmodified in after life, even though the passage of years has removed the original cause.

(*b*) *Circumstantial.*—It is by no means easy, however, to get rid of the feeling of inferiority, owing to the ready-made tendency to overcome it by means of "projection." The mechanism of projection is protective of the inferiority feeling, and works by way of destructive criticism, the purpose of which, by pointing out the inferiority of the other person, is to raise our own relative importance. By criticising someone else we can prove to ourselves that person's inferiority and thereby our own relative superiority. This is the cause of nearly all destructive criticism and this is the reason why constructive and disinterested criticism is so rare. Even fathers have their own inferiority problems, and tend to assume a moral and domestic stature that exercises its superiority by daily demonstrations of the inferiority of junior members of the family.

Schoolmasters are very far from being free from inferiority feeling and its resultant projection mechanisms. They are placed in a position of authority which they are liable to make use of unconsciously and very easily, for there are many causes for criticism, sarcasm, and mirth, at the expense of those whom it is their privilege to educate. Both with regard to work and morals, the schoolmaster is liable to assume an undue standard of superiority while he tries to drive knowledge which they do not wish to learn into the heads of unwilling recipients. Any failure to profit by this teaching, however, is an opportunity for a further demonstration of the pupil's inferiority.

It is particularly in the moral sphere that ministers of the church are inclined to add to feelings of inferiority. The assumption of a standard of perfection is not an encouragement to those who have not yet reached such sinless heights. It tends to add to the measure of relative inferiority, and also to the height of the obstacle which it is necessary for us all to overcome.

Thus on all sides inferiority is forced upon us, because of the protection which destructive criticism affords to the inferiority feelings of others. A vicious circle is set up, in which inferiority exaggerates inferiority and maintains it long after it should have been forgotten.

It is worth while explaining the *psychology of criticism* to the large number of patients who suffer from over-sensitiveness on this point. They quite wrongly let the critic assume father imago's shoes, and tend to accept destructive criticism as if it were a sign of their own inferiority and of the superiority of the critic. When it is explained to them that the critic is being so destructive only because of his own inferiority feeling, it is easy to see that we are rather complimented than otherwise when we are criticised, because it is a sign that the critic has a feeling of inferiority. If the criticism is not destructive, so much the better, but this is unfortunately rare, as there is nothing so useful as constructive criticism.

Many of us, thinking back in our minds to our childhood days, can remember the feelings which were roused by being laughed at on some occasion when we made a mistake which was very ridiculous in the eyes of grown-ups, but which seemed very reasonable to ourselves. If this kind of ridicule is often repeated it may give rise in a sensitive nature to a life-long feeling of inferiority. It is all part of the tendency of grown-ups to adopt an air of superiority towards children, but it is merely another example of their own need for a protective mechanism.

There are many interesting specific causes for the development of a feeling of inferiority. For example, a girl, the youngest of four children with three brothers, is doubly in a position of relative inferiority, firstly because she is the youngest member of the family and therefore in competition with those older than herself, and secondly, unless very wisely handled, she is likely to feel that her sex is a handicap which deprives her of the privileges afforded to her elder brothers. Such a child is liable to grow up unable to tolerate criticism or any feeling of inferiority, who cannot bear to be left out of anything, and who must always be in a position of importance. This attitude is only a protective one, but it is likely to dominate her whole life afterwards, at the expense of the development of her individual character and the privileges associated with her own sex.

Character is formed by such extraneous influences as *position in the family* to a much larger extent than is generally realised. In this respect the youngest child

* A course of 12 lectures delivered under the auspices of the Tavistock Clinic, Tavistock-square, by Dr. E. Graham Howe during the autumn session of 1930. Earlier lectures of the series have appeared weekly in THE LANCET since Jan. 3rd. The first part of Lecture X. appeared last week.

occupies a peculiar position with regard to the older members of the family. Such a child is in a position of inferiority, but is likely to experience certain privileges as the "Benjamin," receiving both the special encouragement of his parents and the protective aid of over-compensation, both of which may act as spurs to his own ambition. It is, perhaps, for this reason that it is the youngest child in the fairy story who is so often singled out for the special reward of the hand of the beautiful princess and half her father's kingdom.

The number of children, sex distribution, age intervals, and the position in the family are all important determinants of "acquired" character, which, through the resultant differences of individual experience and environment, leave their indelible mark. We learn by experience, although not usually consciously, and having learnt wrongly, it is sometimes very difficult indeed to lose what we have learnt, and find our own true selves beneath.

It is a matter of common knowledge that good and successful fathers are often disappointed in their children. This applies both to moral and commercial success. The "good" father may assume a standard of such impossible perfection in the eyes of his children that he may cause in them an intense feeling of inferiority and may thereby act quite unwittingly as a handicap and deterrent to their development. This probably accounts for the fact that the sons of clergymen are sometimes so different in mind and character from their fathers. Any factor which induces a feeling of inferiority will have a harmful effect on individual development, and the goodness, greatness, or success of the father often weighs like a millstone round the neck of the son.

Another factor of a similar kind is found where one of two brothers is successful, to whom the prizes of life come easily, whereas the other, not possessed of the same brains or aptitude, is relatively a failure. If at the same time this invidious distinction is made still more apparent by the remarks of parents and teachers, the inferiority of the less fortunate one is likely to be still further exaggerated, with all its deterrent effects. Many a life has been spoilt through constant invidious comparison in earlier years, in spite of the fact that the one who was supposed to be superior may have shown an early promise that eventually lacked fruit.

ORGANIC INFERIORITY.

(1) *Conscious.*—The most familiar example of conscious organic inferiority is that associated with the psychology of those whose stature is below the average in height. (For a man to marry a woman six inches taller than himself shows the measure of his unconscious over-compensation of his own stature.) Other causes of organic inferiority may be an early infantile paralysis, with the deprivation of full use of an arm or leg, or the possession of a squint which marks a child out for notice as different from and inferior to his fellows. A comparative smallness of the penis may perhaps be noticed in a public swimming bath, and may cause intense feelings of inferiority, of far greater importance than we realise because associated with that function which has such primary biological value.

(2) *Unconscious.—These factors are also of great importance, particularly because they are most liable to be entirely neglected as to their psychological significance.* A common example occurs in those cases in which there is some gonad deficiency, possibly associated with cryptorchism. The resultant feeling of inferiority will not consciously be referred to its cause, but will be felt nevertheless, and consciously rationalised and probably overcompensated. In women ovarian deficiency may have a similar effect on consciousness, and may produce a feeling of relative inferiority which may be still more exaggerated by such an outward sign as hypertrichosis. The whole feeling of inferiority may then be transferred to the hypertrichosis as a rationalised cause. A trichophobia is therefore not by any means to be regarded entirely as a psychological problem, because the underlying physiological deficiency is a still deeper causative factor. The work of Mott, who discovered evidence of physiological gonad deficiency in cases of dementia præcox, becomes doubly interesting when we consider these problems of psychology and behaviour as manifestations of an unconscious inferiority feeling and its associated defence mechanisms, which will be discussed later.

Another example of the same unconscious physiological deficiency is found in many patients who have a low blood pressure. This again tends to cause feelings of inadequacy and to develop psychological symptoms. Quite apart from the effects of toxæmia which may result from chronic constipation, there is probably an additional factor of psychological inadequacy due to not feeling "up to the mark." All these cases of inferiority become doubly important when considered in the light of the unconscious tendency to correct them by over-compensation.

DEFENCE MECHANISMS.

The common unconscious defence mechanisms for a feeling of inferiority are: over-compensation, projection, identification, the wish to be inferior.

Over-compensation.—Unless this mechanism is recognised for what it really is, we are in danger of being very much out in our reckonings. *It is a sign of weakness, not of strength*—and it will surely be recognised that there is a great deal of difference between the two. Over-compensation is a masquerade of strength, and not a real one, and is therefore allied with phantasy. The heart with a valvular lesion is thereby in a state of relative inferiority to the task which is imposed upon it, and it will tend to react by muscular hypertrophy, or over-compensation, but this is a sign of its weakness, not strength. Both in body and in mind the principle of over-compensation is to be found and needs to be recognised if too great a strain is not to be imposed on the organism. It is a mechanism of unquestioned biological utility, but it can only be allowed a limited usefulness, which it is very liable to over-run with disastrous results. In practice it is sometimes liable to be as dangerous as it would be to declare our weakest suit as trumps at bridge, or to attempt to sprint when we felt hardly able to stagger.

One of the commonest forms of inferiority over-compensation is *conceit*, the assumption of a "$1\frac{1}{2}$" standard in place of the feeling of being "$\frac{1}{2}$." The conceited person is typically shy, and the reason why he finds it so difficult sometimes to realise that he is conceited is because his own basic feelings about himself are so intensely inferior. The *snob* is another example of over-compensation, who aims at the top rung of the social ladder because he or she feels sure that their right place is too far below the middle. These are the people who cannot tolerate the slightest criticism with regard to their social status. They must always be at the top, where they can enjoy the destructive criticism of pushing other people down. All kinds of *pomposity*, which is so frequently associated with shortness of stature, are also over-compensations for inferiority, the general defensive

tendency being to put everything in the shop window in order to disguise the deficiency within.

A boy, aged 15, at a public school told his house master that he was terribly anxious about masturbation, and the house master told his mother that it was due to the fact that the boy was oversexed and he needed careful watching. As a matter of fact, the boy was extremely shy, very much of the schizophrenic type, and showed every sign of a gonad deficiency. *He was not oversexed but undersexed*, and his compulsive masturbation was over-compensating for his feeling of sexual inferiority. He was trying to prove to himself by his compulsive masturbation that he was what he felt afraid he was not and also what he was afraid to be—a man.

Similarly, there are many cases of adult immorality which are due to the same over-compensatory mechanism. A patient, aged 22, who came to hospital complaining of sexual impotence, said that he was worried about it because he wished to get married. He stated that he had been in the habit of having intercourse with different girls nearly every night for a year. The first superficial explanation of his trouble might be perhaps that he had been spending too much of his vitality in riotous living. We should not need to learn, however, that things are not always what at first they seem to be. His motive had not been from a plus sign but from a minus, and he had wished to prove to himself that he could do that which he feared he could not. The trouble with such cases is that they are not prepared to do what they can, but are trying to do more than the normal man is content to do. If they can be made content to expect the "1" standard and to give up the "1¾," they can probably be something considerably better than a "¼."

It should not be news to us to learn that the man who is most given to boasting about his sexual adventures, or to relating stories of a sexual interest, is not the one who is most sexually potent. Nor is it necessarily true that the ability to consort with prostitutes or keep a mistress is a sign of sexual superiority. Many men do both those things from an unconscious motive of sexual inferiority, and for the same reason are most likely to talk about themselves and their affairs.

It is very easy to see how over-compensation may lead to *phantasy*, because they are both derived from a fear of reality, and there are no limits to the achievements which phantasy may provide. It is the happiest of all hunting-grounds for inferiority compensation—as long as it does not have to come up against reality. That is where the trouble becomes serious, and the tendency is then to make a further flight into phantasy. But in this direction lies insanity, and we see, perhaps, in this mechanism something more of the psychology of dementia præcox, with its adolescent inferiority, overmastering urge for omnipotence, and flight into phantasy and regression.

If over-compensation keeps within the bounds of the individual's potential actual achievement, the results are only good, as for example was the case with the blind Hellen Keller. But it must be borne in mind that as a rule we are not dealing with such material, because the deficiency is usually more deeply seated and widely spread than a mere localised visual defect. *A gonad deficiency effects the patient's attitude towards the whole of life, and his deficiency is as real as his over-compensated demands upon life are abnormally exaggerated.* It is no wonder, then, that the problem of the treatment of dementia præcox is an extremely difficult one.

Let us repeat our only safeguard: "The standard of the demand which we make upon life must be less than is our individual potential capacity for achievement." The difficulty lies in the fact that our unconscious defensive over-compensatory mechanism has an innate tendency to flatly disobey this rule, with results that are frequently the cause of the development of more or less serious mental disorder.

Towards all over-compensators our first reaction is in terms of destructive criticism and an assumption of superiority, possibly with ridicule or sarcasm, in order to keep them in their places. But this is obviously quite the wrong kind of treatment, because they are already trying to escape from inferiority, and to make them feel still more inferior is not going to do them any good. Adolescence grows out of its assumption of knowing everything by learning something—i.e., by achievement. What all people suffering from inferiority require is sympathetic help towards real achievement from someone who is himself not too "superior."

Projection.—Sufficient has already been said about the value of destructive criticism, with its tendency to transfer to others the blame which we do not wish to shoulder ourselves. It is much preferable to cast the beam out of someone else's eye rather than to attend to the mote in our own.

Identification.—This is the psychology of hero-worship, and is again more useful and less harmful than any other mechanism. We tend to become like the people we admire, partly by a process of suggestibility and partly because they represent our wish-fulfilment. There is, however, a subtle danger lest we tend to compare ourselves with someone too far above our own possibility of real achievement. It would be disastrous for the chairman of a small committee, for instance, to identify himself with Mussolini, even though it might overcome his feelings of inferiority. In the same way the Christian religion presents a subtle danger to innumerable people suffering from inferiority feelings, by offering them a standard of identification which they are often too ready to accept and they are, indeed, often strongly encouraged to do so. It is a sign of psychosis when a person says that he is Christ, but there is often a tendency towards this identification not only in neurotics but in many exponents of religious principles, who have adopted it rather in phantasy than in reality. In spite of it, therefore, they are liable to be lacking in the ordinary standards of Christian charity.

Wishing to be Inferior.—Why should anyone wish to be inferior? There are two possible motives for self-gratification to be found in inferiority itself—namely, *masochism and regression*, both of which offer a very subtle problem to those who are interested in psychological medicine. The masochist is always seeking for some excuse for self-pity and is the willing martyr who turns his other cheek for the pleasure of having it slapped. Destructive criticism is therefore accepted willingly if not joyfully, because inferiority is itself a desirable goal. Such people may complain of their illnesses and their sufferings and their ill-treatment, but they do not wish to have anything changed. It is therefore necessary to cure their masochism before anything else can be done. The wish to regress, to go back to the protection and priority of infancy, may also be achieved through an assumption of inferiority. The desire is to avoid the responsibility and obstacles of life, and if such a one is sufficiently inferior he is beyond criticism and beyond expectation of anything else, and therefore beyond any feeling of relative inferiority. These two classes of patients are extremely difficult from the point of view of constructive therapy.

The Spoilt Child.

The thorny and painful path trodden by spoilt children is paved by good intentions. They are surrounded by love and appreciation from earliest days. Life is made easy for them. They are led to expect everything to come to them without effort and their self-esteem is thereby exaggerated. But if they ever need to face reality, tragedy is inevitable. The love with which they have been surrounded is not of the mature unselfish kind, but the immature love of their parents for their own undifferentiated ego. Such affection, however generously it may be lavished, is no more than self-centred self-love, which has been transferred to the child as an extended attribute and possession of the parent.

The love which spoils the child is self-love, not object-love. It is the kind of love that is never far from fear and never far from possessive phantasy. Its effect on the child is disastrous because he or she expects always to be treated with the same tender protection and esteem. Opportunity for achievement is minimised and therefore self-confidence is lacking. Fear of reality is increased, but self-esteem and the measure of expectations are at the same time present in the highest degree. The boy who has been spoilt at home discovers what life is really like when he enters the public school, and also what his mother's "love" has been worth to him. He finds a gap which reality cannot bridge and he will require every defence mechanism in order to hold his own. If these are not sufficient, he must resort to invalidism or to alcohol to bridge the remainder of the gap. There is no greater tragedy in life than that of the spoilt child, because it is the tragedy of good intentions, where love has been poisoned unconsciously and unwisely by self-love.

CASE AA.—Woman, married, age 52; three children. *Complained of:* Recurrent depression. Bursting into tears. Physical weakness. Insomnia. Her husband stated that she was always trying to do too much at home and then breaking down in complete exhaustion. He said that she was extremely irritable and that it was impossible to do as you pleased in the house, as she was one of those house-proud wives who would rather a chair looked perfectly tidy than that it should be sat on in comfort.

Signs: Blood pressure 110/75. Height 5 ft. 1 in. Probably subthyroid.

History: She had been married 25 years, but had spent most of her married life in and out of nursing homes. The house in which she was living was old and rambling and contained about ten bedrooms, most of which were not used, but all of which were kept scrupulously tidy. She stated that she could never keep a maid (which was not to be wondered at) and that most of the housework and cooking, at intervals, devolved upon herself, but that she found it an intolerable burden.

She was the youngest of a family of athletic sisters, and had always been regarded as the invalid of the family. Where her sisters could go on playing tennis all the afternoon, one game made her feel as if she wanted to go and lie down. Rather than do that, however, she would go on playing until she felt like dropping. Because of her weakness, she felt that she was left out of everything at school, which made her resentful, as she was one who always wanted to be in the centre of everything.

When she married she took to her matrimonial responsibilities with exaggerated enthusiasm, but very soon found a great deal to complain of in her husband, who gradually turned more and more to his business to escape from the nagging of his disappointed wife. She had three children, all boys, whom she mothered with great energy in the intervals between every kind of illness, real and imaginary. After the third child was born she had to go to a nursing home, and after that more than half of every year was spent in nursing homes, where she was a complete puzzle to her physicians.

Her treatment consisted in helping her to realise her limitations and to dissociate her acceptance of them from any feeling of inferiority. When she first came into the nursing home she was vindictive in her criticism of everyone and everything, and spent most of her time in tears of self-pity. After a few weeks, however, she began to see that neither herself nor anybody else was as bad as she had previously felt them to be. Her husband being quite willing that she should do so, she was then advised to sell her house and to take a suite of rooms in a hotel where she would have no service problems and no responsibilities. At the same time she was given a small car of her own in order to avoid the fatigue which she always felt from walking.

The result was a complete success and she was able to live at a quite satisfactory "¾" level of existence, enjoying her life, appreciating the company of others, and for the first time stopped criticising her husband. She has remained in good health and has not since felt the need for successive periods of recuperation in nursing homes.

CASE BB.—Male, unmarried, age 34.

Complained of: Depression, anxiety, insomnia. "Life has always been a burden to me."

Signs: Dark, haggard, long hair, pathetic, æsthenic. He looked like a doped and unsuccessful poet.

History: He was the eldest of three brothers and one sister. His father was a missionary, possessed of an insane temper and a Jehovah identification. As a small child the patient said that his father used to flog him with a slave-whip made of rhinoceros hide on every possible occasion and with every possible excuse, always with the verbal assumption that "God was on his side." He said that the only commandment which mattered to his father was the fifth. He described how his father had tried to teach him to swim when he was 5 years old by carrying him on his back to a rock out in the bay and there leaving him howling with terror for the whole morning. He thought that his father's idea was that this would harden him and so overcome his fear. His memories of his father were all of the same kind. For example, his father had told him that he should be very grateful to him for having chosen such a mother for him, as he might have chosen a much worse one. Passing a beggar in the street, his father would say, "That is what you will be when you grow up." At the age of 12 his father, being in a punitive mood, gave him an extra hard thrashing because he said "When Christ was your age He was already about His Father's business."

At the age of 17 the patient wished to enter a bank, but in the course of his examination he was discovered to have albuminuria. He accepted this as if it were his first piece of good luck in life, because it provided him both with an escape and an excuse. He went abroad, where he engaged in business for a few years and also fell in love. The latter, however, proved abortive because he did not tell the girl anything about it, but one day said to her mother, "I suppose it is no use my thinking of marrying your daughter?" and he was quite satisfied with her reply, "No, it is not." He had no defence mechanism to support his inferiority, other than a wish to be inferior. He was the self-accepted martyr, willing to be the least and the worst, pitying himself when no one else would pity him. He had one other satisfaction, however, and that was that in punishing himself he was also punishing his father, and this was unquestionably the strongest motive of his whole existence.

Such a patient has no wish to get well and, short of finding an environment in which some mother-substitute could make up to him something of what he had missed in life, it is doubtful whether any psychotherapeutic measures could hope to restore him to normality.

OPHTHALMIC HOSPITALS.—The Birmingham and Midland Eye Hospital reports that last year 2096 in-patients were admitted, an increase of 234 over the previous year, and the largest number ever before treated. Their average stay was 14·17 days and their weekly cost averaged £2 12*s.* 6*d.*, a fall of 5*s.* 7*d.* There were 45,074 new out-patients. In consultation with the city health department a system of home visitation of infants suffering from ophthalmia has been instituted, and two specially trained nurses have been employed for the purpose. Since the inception of the scheme in May last year over 1000 domiciliary visits have been paid, and the experience that has been gained shows that the additional expense has been amply justified. A new department for the treatment of squint by fusion training has also been established. The annual report adds that should this new method of treatment be productive of good results the department will have to be considerably extended to deal with the large number of squint cases attending the hospital.—In 1930 there were 964 in-patients at Wolverhampton Eye Infirmary; in 1893 the number was 468. The Hospital Saturday Fund contributed £4287.—The Sussex Eye Hospital last year dealt with 417 in-patients and 5832 out-patients, figures which show a large increase.

SPECIAL ARTICLES

PREVENTION OF BLINDNESS.

FOUNDATION OF AN INTERNATIONAL ASSOCIATION.

THE International Association for the Prevention of Blindness was founded and held its first session at The Hague on Sept. 14th, 1929, being associated with a meeting of the International Congress of Ophthalmologists at Amsterdam. Preliminary meetings had been held by a provisional committee, while a report from the League of Nations on the Welfare of the Blind as a world problem had also been published. The existing permanent organisation came into being at The Hague with the following executive:—President: Prof. F. de Lapersonne (France); Vice-President: Dr. Park Lewis (United States of America); Secretary-General: Dr. F. Humbert (Switzerland); Treasurer: Mr. Demachy (Treasurer of the League of Red Cross Societies); and the late Prof. Th. Axenfeld, replaced by Prof. A. von Szily (Germany), Dr. Roffo (Argentine), Prof. M. Marquez (Spain), Mr. Bernard Cridland (Great Britain), Prof. Trantas (Greece), Prof. J. van der Hoeve (Holland), Prof. E. von Grosz (Hungary), Prof. L. Maggiore (Italy), Dr. Shinobu Ishihara (Japan), Dr. Villarreal (Mexico), Prof. J. Szymanski (Poland).

Origin of the Movement.

The Association, through Mr. Cridland, desires to make known the origin of the movement, for its success will be quicker as pecuniary support is prompt while the back history shows how long the world has needed such work as is now progressing. Mr. Cridland writes:—

The first organised attempt was the formation of the London Society for the Prevention of Blindness some 50 years ago, at about the same time that Credé's great work on ophthalmia neonatorum became known, and the first task that this society attempted was to propagand the value of this epoch-making discovery. Its next step was to offer at the Fourth International Congress of Hygiene in 1882 a generous money prize for the best essay on the prevention of blindness; this was awarded at the Fifth Congress in 1884 to the late Prof. Ernst Fuchs, at that time of Liége and later of Vienna, and it stands to the present day as one of the best papers on the subject. Then in 1903, and again in 1906, American legislation took a hand by making an investigation into the condition of the blind and the causes of blindness in the State of New York. In 1908 Mr. Bishop Harman established schools in which special education was carried out for children suffering from progressive high myopia and defective sight from other causes. In 1909, the notification of cases of ophthalmia neonatorum was made compulsory in Stoke-on-Trent and a little later in the county of Staffordshire generally, the rest of the country following. In 1914, owing largely to the foresight and energy of a great philanthropic lady, Miss Louisa Lee Schuyler, the United States National Committee (now Society) for the Prevention of Blindness, an entirely voluntary organisation, was founded and has progressed with such success, that now with a membership of 25,000 and an annual budget of 140,000 dollars a year it stands as an example to all civilised countries. In 1918, the Council of British Ophthalmologists was formed, its task being to act as an authoritative and representative body to assist Government departments and other representative bodies in, amongst other things, measures for the preservation and welfare of the eyesight of the community. In 1922, in this country, the Departmental Committee on the Causes and Prevention of Blindness published its second and final report, a work which has been accepted as authoritative throughout the world. In 1924, a step towards the prevention of the high percentage of blindness in China was made by the formation of an association called the International League for the Prevention of Blindness in China, and the task which lies before it is tremendous. In the same year Dr. Park Lewis, Vice-President of the United States Society for the Prevention of Blindness, delivered an interesting address at the Oxford Ophthalmological Congress, in which he put forward a plea for international coöperation in the work of prevention of blindness. In the following year, 1925, Mr. Treacher Collins, the honorary president of the International Congress of Ophthalmology, made "The Elimination of Eye Disease" the subject of his address when presiding in London over the Congress of English-speaking Ophthalmological Societies, and at the conclusion urged that "international coöperation against a common foe such as disease is the most likely way to secure international peace." In 1928 and 1929 a provisional committee studied the possibilities of international coöperation for the prevention of blindness and decided that the time had arrived for a definite movement of an international character towards this end.

The Inaugural Meeting.

Twenty-six different nations were represented at The Hague meeting, through individuals or delegates from the Red Cross Societies, societies concerned with public hygiene, infant welfare, prevention of venereal disease, and ophthalmology, and Prof. de Lapersonne delivered an eloquent introductory address, in which he set out the humanitarian and practical claims of a world league to prevent blindness. A translation of this address has been furnished to us by Mr. Cridland, from which the following excerpt shows the practical nature of the arguments employed to enlist the sympathy for the movement, not only of the humanitarians or the doctor, but also of business communities and politicians.

"The enormous development of industrial life, particularly in the metallurgical, electrical, and chemical industries, has resulted in an increase in the number of cases of blindness caused by workers' accidents or occupational diseases, in spite of improved machinery and drastic labour regulations. Considered exclusively from the financial standpoint, statistics compiled by the State of Pennsylvania show that in the space of eight years more than 40 per cent. of the compensation awarded for permanent disablement have been in respect of eye injuries; out of a total of 15 million dollars paid out in compensation, 6 millions were granted for the loss of one or both eyes. In every country of the world, the Government, the health and labour departments, manufacturers' associations, and insurance companies should coöperate in order to ensure more adequate protection of workers' eyesight. I will not go further into the question of wounded soldiers than to say that after 12 years we are still confronted with the nightmare of war disabled men, 3500 of whom, in France alone, are blind. We must therefore persevere in our peace-time activities, promote friendly relations between nations, and help in the process of war liquidation."

The International Anti-Trachoma League, whose foundation was planned at the same International Congress of Ophthalmologists as the Association for the Prevention of Blindness, held a meeting in the Palace of the League of Nations in Geneva in the autumn of 1930,[1] when the League of Nations issued a circular letter to all Governments requesting support for the scheme, which clearly was cognate to the work of the International Association.

The Second Meeting.

The second meeting of the International Association took place last October at Brussels, and we have received, through Mr. Cridland, a full account of the proceedings. These show the particular value of assistance received from the United States and Red Cross, and lay stress on an inquiry being made into industrial accidents by ophthalmologists practising in appropriate areas, as well as to the active coöperation of the executive committee of the Anti-Trachoma League. The report of the general secretary explained that the issue of a world appeal was awaiting a more suitable time, but that the issue to a restricted number of well-wishers had met with a response which "almost

[1] THE LANCET, 1930, ii., 359.

wholly from members of the medical profession had been generous and very gratifying considering the small number of people concerned."

The rest of the proceedings consisted of a number of scientific communications, among which one may be picked out dealing with the conditions in China, by Dr. Lossouarn, of the School of Medicine, Tientsin. Dr. Lossouarn, who has been in practice in Tientsin for 17 years, supplied the result of investigations which showed that half a million persons in China have lost their sight from small-pox alone, constituting 35 per cent. of the total number of blind. Xerosis from faulty hygiene ranks next, although it must be presumed that this is a temporary cause only. Trachoma is the third numerical cause, followed by syphilis (50 per cent. of the population in the towns are infected) and gonorrhœa, whilst a common cause is injury to an eye by the pricking of any part of the organ by a relative or quack. The existence of the latter is not surprising when it is considered that there is only one Chinese physician with an occidental training for every 200,000 inhabitants. To combat this state of affairs, there are in Tientsin four dispensaries where vaccination, antisyphilitic treatment, and ophthalmic treatment are being carried out. There are 191 dispensaries in the interior, which do their best on similar lines in charge of missionaries, who receive eye drugs and vaccine free.

The session concluded with an interesting address on trachoma by Prof. A. Angelucci (Naples) in which he discussed the relationship of trachoma, follicular conjunctivitis, and adenoidism. From the interest generally displayed throughout the meeting, it may be concluded that the Association has made an excellent début. As the result of the decision that the time for the issue of the world appeal on behalf of the Association was inopportune on account of the general financial depression, it has been decided that national committees should be formed in the affiliated countries, and a British committee is now in the process of formation, details of which will be given shortly.

THE ABOLITION OF BILLS OF HEALTH.

By Gilbert E. Brooke,
P.M.O., Sarawak; formerly Port Health Officer, Singapore.

A bill of health is, or should be, one of the most important of all the documents carried by a sea-going vessel. In its influence on the world in general it far surpasses in value the other documents, such as manifests, clearances, and passenger lists, which help to fill a shipmaster's portfolio and a shareholder's bank balance.

Unfortunately a movement has, in recent years, been mooted to abolish bills of health altogether. In the Paris 1912 Convention no mention was made of bills of health except a casual reference, in Article 107, to a document required for pilgrim ships. In the 1926 Convention, bills of health are mentioned, in Article 49, for the first time; and then, alas, only to foreshadow (para. 4) their gradual abolition.

An analysis of the reasons for this action would seem to disclose a two-fold argument: (*a*) that the dissemination of information with regard to infectious diseases in the ports of the world and in their hinterland is now widely secured in Europe by the "Office International d'Hygiène Publique"; and, for the East, by the League of Nations Epidemiological Bureau in Singapore; and (*b*) that a percentage of shipping masters, and shipping firms, are averse to the payment of fees, for the issue of the bill of health and for a visa by a Consul.

The first of these reasons must have been put forward by persons unacquainted with the practical working of marine hygiene, who have quite missed the principles underlying the very valuable contributions of modern epidemiological staff work. A health officer boarding a number of ships each day does not carry with him a file of bureau reports through which he can laboriously search for information about the ports from which a ship has come. He expects to find the records of the previous week and of the whole year succinctly stated on the bill of health—in fact, in certain cases this is a necessity, for there are still ports devoid of liaison. The value of modern epidemiological information is not therefore as constituting an asset to the health officer boarding ships (who should have the help of his bill of health), but is rather that of an adjunct of paramount importance to the health officer in his office, on whose shoulders rests the responsibility of advising his government with regard to the imposition or removal of quarantine restrictions, and the necessity, or otherwise, for setting in motion the administrative machinery of action.

The second reason (*b*) given above is probably dictated by the exiguous profits resulting from the recent depression of trade. It is, of course, no argument at all for the abolition of bills of health, though it may indicate that the recommendations of Article 49 (1) of the Paris Convention might with advantage be carried out—viz., that bills of health should carry no fee. The very fact that two such reasons should have been put forward shows that the nature and functions of a bill of health are but little understood by the public.

It is better that the matter should be clearly grasped, since there are bills of health *and* bills of health. For many years the form in general use throughout the world was absolutely useless, and some of these futile forms still exist I fear. I quote some examples:—

Aden, 22 March, 189—

I hereby certify that this Port is free from all Infectious or Epidemic Disease dangerous to life, that the state of public health is good and that the Steam yacht Z———— leaves this Port under the most favourable sanitary conditions as regards the port.

(Signed) ————————

Port Surgeon, Aden.

The following is a form used for years by the medical officers of the Chinese maritime customs in some of the treaty ports:—

"I certify that I have examined the crew and passengers of the s.s. ———— and that I find no signs of plague, cholera, or other infectious disease amongst them."

(Signed) ————————

Somewhat similar and uninformative documents are issued by the British consular service, British port authorities, and many others, including the great port of London where the issue is in the hands of the Custom House and not dealt with by the health authorities at all—which is like expecting a paymaster to make charts for the naval hydrographer.

The facts which a port health officer should properly glean from a bill of health are:—

(*a*) Description of the ship.
(*b*) Ports called at during the voyage.
(*c*) Deaths which have occurred on board.
(*d*) Number of cases and deaths on board from infectious diseases which have occurred during the voyage.

(*e*) When and where was she last disinfested or disinfected.

(*f*) The "present history" in each port, covering points which may be of extreme importance—e.g., (1) whether the ship has been berthed at a wharf—or in an open roadstead which covers the question of rats and mosquitoes. (2) What is the nature of the cargo—i.e., is there rat-suspicious cargo on board. (3) Has she taken water and fresh provisions on board. This is often very important, depending on the port and its conditions. (4) How many passengers of each class are leaving on departure.

(*g*) The health condition of the port at which the bill of health is issued. This should cover not only the number of cases which have occurred in the port during the week preceding departure, but also a summary of the total cases in the port, from the beginning of the year, to date.

A sample of a satisfactory bill of health will be found in "Marine Hygiene and Sanitation" (Baillière, Tindall, and Cox, 1920, p. 334).

MEDICAL SOCIETY OF LONDON.

ANNUAL DINNER.

THE 158th anniversary dinner of the Medical Society of London was held at the Trocadero Restaurant, London, on Friday, March 6th, Dr. R. A. Young, the President, being in the chair and presiding over a large company of Fellows and guests, among whom were the following: Mr. Norman Birkett, K.C., M.P.; Mr. E. R. Peacock; Sir William Rothenstein; the President of the Royal College of Physicians; the Master of the Society of Apothecaries; Director-General, Medical Department, the Royal Navy; Director-General, Army Medical Services; Director of Medical Services, Royal Air Force; the Presidents of the Royal Society of Medicine, the Royal Society of Tropical Medicine and Hygiene, the Hunterian Society, the Chelsea Clinical Society, and the Harveian Society; the Chairman of Council, British Medical Association; and the Editors of *The Lancet* and the *British Medical Journal*.

After the loyal toasts the toast of the evening, prosperity to the Society, was proposed by Mr. Norman Birkett, who in a witty speech disclaimed any attempt to compete with the 157 predecessors who must on similar occasions have paid tribute to the services and merits of the Society. He gave as the reasons why he was particularly pleased to be associated with the toast that such an occasion represented the exercise of hospitality, the cementing of friendship, and the advance of knowledge by intercommunication.

The toast was replied to by the President who, pointing to the position enjoyed by the Society, said that it was not only the oldest of the medical societies and, in some senses, their parent and exemplar, but had a place in the affection of its Fellows, suggesting an indefinable aura or soul—the quality that gives charm to a woman and personality to a man. He liked to think that the generous spirit of the Founder, the great Lettsom, brooded over the meetings and that the predecessors of their labours fructified their debates. In a brief narrative of the history of the Society, he said that on June 23rd, 1773, Lettsom published hints for its establishment with the intention of bringing practitioners into intercommunication, and that the by-laws then suggested showed no material alterations. He gave an amusing description of the difficulty which the new association experienced in finding a home, for Lettsom attempted to get rooms in the Queen's Arms tavern at Newgate-street, "for not more than 10 guineas a year," while a subsequent attempt "to become tenants at 15 guineas a year" of premises in Wardrop-court proved unsuccessful. But in August, 1773, some meetings were held at the Sun Tavern, and later accommodation was found in Crane-court, both in the City. At last a house was taken in which rooms were sublet to a doctor who had to be evicted for non-payment of rent, and here, said Dr. Young, the earliest meetings were characterised by the friendliness which now marked their proceedings, until a serious breach in this urbanity occurred in 1775 when the President and both the secretaries resigned and locked the premises against the Fellows. Lettsom was called in as a mediator, peace was restored, and on July 4th of that year the first anniversary dinner was held at the King's Head Tavern, the inclusive price of the dinner being 5*s*. 6*d*. In 1788 Lettsom gave a freehold house in Bolt-court to the Society which they occupied for over 60 years, until, in 1850, after the amalgamation with or absorption of the Westminster Medical Society, they migrated to Hanover-square, remaining there till 1871. In that year the present premises in Chandos-street were taken on lease, the freehold being obtained a few years ago. Dr. Young emphasised that now, and for the first time in the memory of Fellows living, the Society was free of debt, while it was housed on its own freehold property, and in this connexion he paid special tribute to the foresight and energies of a former treasurer, Dr. Harold Des Vœux, and Mr. Haines Carter, the registrar. He further informed his hearers that practical steps were being taken to ensure the maintenance of their prosperity, for the Council, in order to prevent the necessity of future borrowing and to meet present aspirations, was starting an endowment fund, having the sum of £25,000 as an objective. Recurring to back history, Dr. Young quoted from Fernandez Clarke's well-known "Recollections of the Medical Profession," mentioning that Clarke, like himself, had been a member of the staff of THE LANCET. The description given in this book of the meetings of the Medical Society at that time showed a curious procedure, for the President would at any time leave the chair and address the meeting at considerable length, taking off the presidential cocked-hat to do so, and resuming it when he returned to his chair. Dr. Young, in closing, confessed to having always longed to be President of the Society, while he regretted the loss of the cocked-hat, which had been worn by presidents until 1838 and remained in the possession of the Society until 1874 when it disappeared.

The toast of the visitors was proposed by Lord Dawson who, referring to Mr. Norman Birkett's distinguished position, and comparing the professions of law and medicine, said that, while he admired immensely the powers of reasoning displayed by lawyers, he was bound to point out that they had a very safe outlet in the provision for "reserving judgment." Further, they obtained equal esteem as advocates whether in the issue they turned out to be right or to be wrong; infallibility, he said, was not expected of lawyers, was assumed for themselves by journalists, but expected from the public from doctors. Lord Dawson here gave an estimate of the services rendered to medicine by the work of the *British Medical Journal* and *The Lancet*, words which received gratifying endorsement from the company. Sir William Rothenstein, he added, we welcome as

a great artist and again as a teacher, first at Sheffield University and later at South Kensington. As a portrait painter he delineates what Nature fashions and intends, and what we try to preserve in their strength and beauty. Like us he possesses the aptitude of seeing the truth he knows not how—for does it not happen that the painter depicts features which anticipate happenings?

The toast was replied to by Mr. E. R. Peacock, Director of the Bank of England, who adduced as his personal tribute to the progress of medicine his early recollections as a child in Canada. He recalled the dramatic circumstances of a surgical accident in his own family in an outlying village in Ontario, when there were, of course, no telephones, happened to be no telegraph service, and worst of all no roads, but only unlighted and undefined tracks across marshes. He compared the conditions with regard to medical service of those days and the present time, pointing out how prominently the developments of medicine showed up in the progress of the world. He closed by paying an eloquent tribute to the medical profession for the amount of unpaid work that they were expected to do by the public, and which they did cheerfully, and most of the time without the cognisance of the outside world.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

MINERALS IN PASTURE.

FOR some years an investigation into the mineral content of natural pastures has been carried on in Scotland and in Kenya under the auspices of the Economic Advisory Council. The committee includes Major Walter Elliott (chairman), Sir Robert Greig, Secretary of the Department of Agriculture for Scotland, and Dr. J. B. Orr, Director of the Rowett Research Institute, Aberdeen. The latest report (obtainable from H.M. Stationery Office) contains valuable information on the effect of fertilisers on the soil and indirectly on the grazing animals. The results of the feeding experiments are perhaps the most striking. In the districts where pastures were deficient in certain minerals, the provision of these to the grazing animals was followed by an increase of about 30 per cent. in the yield of dairy cows, about 10 per cent. in the rate of growth of lambs, and about 10 per cent. in the weight of the fleece of sheep. In the districts where the pastures were rich in minerals, supplements of this kind had no definite effect on the milk yield or rate of growth of lambs. In one of the districts, where the investigation had for its object the discovery of a method of preventing a disease, "nakuruitis," believed to be due to some deficiency in the pasture, it was found that the disease was prevented if the animals were allowed access to a mixture of common salt and an iron salt. In the districts examined, the deficiency was mainly in sodium and to a less extent in chlorine. In one of the districts the pasture, apart from deficiency in sodium and chlorine, was as rich as good British pasture. In the other three districts the pastures were deficient in all mineral nutrients and also in protein, the greatest deficiency being in phosphorus. In one of the districts the deficiency of phosphorus was as great as they found in certain areas in South Africa where it is the cause of disease in cattle. The application of different kinds of fertilisers to the pastures in the most deficient areas increased the yield of pasture from 25 per cent., where the common salt only was used, to 400 per cent., where nitrogen and phosphates were used. Where phosphates were used the pasture remained green during the drought for a longer period than the surrounding untreated pasture. Grazing animals showed a marked preference for the parts treated with fertilisers. The expense of the investigation has been met by the Empire Marketing Board and the Kenya Government.

OBSERVATIONS ON CHILDREN.

I am glad to notice that the work carried on by Dr. A. Rowland at the James Mackenzie Institute, St Andrews, continues to be supported by the Medical Research Council. It is hoped to obtain data from 500 children in respect of family history, environmental conditions, diet and general nutrition, dental diseases, and sickness. Records of 252 children are now complete and are being analysed. It is expected that this long and elaborate research will illuminate many obscure points in the disease history of young infants. It is quite in the spirit of Sir James Mackenzie's conception of research. He wished particularly to direct attention to the approximate moment when abnormalities either of structure or function asserted themselves in the growing organism. The conditions at St. Andrews, both at the Institute and in the city, are favourable for this type of investigation.

DRUG ADDICTION.

In a recent lecture at Glasgow Prof. A. J. Clark, of Edinburgh, said that the abuse of drugs of addiction was one of the difficult problems confronting modern civilisation. Last century the dominant problem was the export of opium from India to China. That trade ceased early in the present century, but to-day the export of opium from Persia was increasing rapidly. A commission to the League of Nations had recently reported on opium smoking in other countries in the Far East, and their report gave reason to hope that that evil would be checked by the concerted action of the Powers concerned. A much more serious danger, however, was the international traffic in alkaloids of addiction—morphine, heroin, and cocaine. These alkaloids were invented here, and up till recent years Europe had produced nearly the whole. The populations of the Near and Far East suffer far more from addiction to these drugs than the European countries did. At present, the outstanding problems were heroin addiction in Egypt, morphine and heroin addiction in China, and cocaine addiction in India. Smuggling into these countries was conducted by international gangs, and single consignments of more than half a ton had been seized. It was known that at least four tons of heroin had been smuggled into Egypt in a year. The significance of these figures was best indicated by the fact that a ton of heroin represented 100 million therapeutic doses, and that the legitimate medical use of heroin only amounted to about two tons a year in the whole world. Prof. Clark remarked that the first duty of the nations of Western Europe was to fulfil The Hague Convention of 1912, and to limi their manufacture of their alkaloids of addiction to quantities commensurate with the medicinal needs of the world. There would then remain the problem of how to prevent unscrupulous international gangs from establishing factories in poor and backward countries and pouring out a flood of poison from these bases.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

SCHOOL HOURS.

A MOVEMENT is on foot to rearrange the school hours in Ireland so as to allow a child to get a solid meal at his own home in the middle of the day. At present the primary schools open at 9.30 or 10, and do not break up until 3 P.M., half an hour being allowed in the middle of the day for lunch and play. Children do not leave the school premises during this half-hour but ordinarily spend it playing in the yard. Five hours without a solid meal for growing children is obviously too long a period, and by the time the child arrives home he is often so tired as to have lost his appetite. Moreover, in working-class homes, dinner, the principal meal of the day, has been cooked and eaten an hour or two earlier, at the time the father came home from his work. The mother is unable to cook two hot dinners in the day, and the child usually gets only bread and tea. To remedy this state of affairs it is suggested that school should be held in two sessions of two or two and a half hours, with a break of two hours in the middle, say from 12 to 2. This has been strongly urged by several correspondents of the daily press recently, and in the towns at least there seems to be no strong argument against it. In some country districts, however, the distance between the school and the home may be so great as to render a visit home in the middle of the day impossible. It is a pity that the good case for reform should be spoiled by the extravagance or looseness of thought of some of its supporters. One does not doubt that the present system of school hours tells against the health of many of the children, but the facts should be stated without exaggeration or violence. The well-informed statements of the medical officer of health for Dublin and the school medical officer afford a relieving contrast to the somewhat hysterical outbursts of others of the reformers.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

HEALTH IN 1930.

REPORTS from the health departments show little evidence that the industrial depression has had any adverse effect thus far upon the health of the nation. "The health of the people of New York," we are told, "has never been better." There were fewer deaths from most of the important diseases of childhood than ever before, and the infant mortality (58) is the lowest on record. A new minimum death-rate was established in tuberculosis. The health officer points to increase in homicide and suicide as being "very likely a direct reflection of the bad economic situation." Dr. Dublin notes the increase of suicide amongst the industrial policy-holders of his great life assurance company and offers the same explanation. The Metropolitan in other respects has also had a record year—the lowest mortality in its experience, a new minimum for tuberculosis and also for the communicable diseases of childhood. The diphtheria death-rate in three years has been almost cut in half. In a single year it has been reduced more than one-third. In this country we are disposed to congratulate ourselves that we are showing the way to older nations in the matter of diphtheria prevention.

DANGERS OF METHYL-ALCOHOL.

From the beginning of the cold season a controversy has been going on about the use of wood-alcohol as an anti-freeze in the radiators of motors. As early as October the Industrial Commission of Wisconsin issued a warning poster pointing out that wood-alcohol is poisonous whether swallowed, inhaled, or absorbed through the skin. The warning added that "authorities advise" that it is a cumulative poison, that the toxic dose is not large, and that the poison is easily vaporised in automobile radiators. About the same time (Nov. 2nd) Dr. Morris Fishbein (editor of the *Journal of the American Medical Association*) is quoted as having said that "If this substance (wood-alcohol) is to be used as an anti-freeze mixture in the coming winter, employees of garages who will inhale large amounts are likely to suffer injury as a result. . . . As is usual in modern industries, the name of the product has been concealed by the bestowing of fanciful names and the average person does not recognise, under the fanciful title, the old, old hazardous wood-alcohol."

On Dec. 6th the U.S. Bureau of Mines issued a report containing the following provisional conclusions and recommendations:—

1. Observations made by the Bureau of Mines have indicated there is no danger of poisoning from the use of methanol as an anti-freeze for automobile radiators.

2. The evidence that methanol poisoning has been caused by absorption through the skin is rare and inconclusive.

3. Practically continuous exposure to low concentrations and short intermittent exposures to high concentrations of methanol can see no apparent harm, but on the other hand continued exposure to high concentrations will cause serious poisoning.

4. All methanol, whether made by wood distillation methods or synthetic methods, or whether it is crude, refined, or highly purified, is poisonous when taken internally. It will cause serious poisoning, blindness, and possibly death when as little as two ounces is taken into the stomach.

5. To avoid misuse it is recommended that in the future all anti-freeze methanol be brightly coloured to enable garage attendants and the public to identify it as methanol; and to warn against misuse, particularly for beverage purposes.

At this point the U.S. public health service joined its authority to that of the Bureau of Mines. Surgeon-General Cumming exonerated methyl-alcohol as an anti-freeze, but he again emphasised the danger of drinking methyl-alcohol and spoke also of the danger of its use in shellacs. He recommended that at present methanol be sold to the public as an anti-freeze only. The controversy, however, has not come to an end. On Dec. 11th Hon. Leonidas C. Dyer read in the *Congressional Record* an article by Mr. Henry C. Fuller, formerly a chemist in the U.S. Dept. of Agriculture, in which he questions whether methyl-alcohol should ever be used when substitutes are available. Fuller quotes Tyson, surgeon to the Knapp Memorial Eye Hospital, New York City, who made a report before the American Medical Society for the study of alcohol and narcotics in December, 1915, as follows:—

"When its vapour is inhaled in a confined space it is just as poisonous as if the same quantity had been imbibed, as evidenced by the many cases of partial or total loss of vision and death observed in workers varnishing the interior of beer vats, in closed rooms, lead pencil varnishers, hatters, metal workers, and others."

A few days later the Health Commissioner of New York in announcing a projected amendment in the sanitary code "regulating the sale, handling, and use of anti-freeze compounds containing wood-alcohol," said that instances had come to the attention of his department in which painters using varnishes made of wood-alcohol were killed by the fumes. "It is well known," said the Commissioner, "that the

vapours of wood-alcohol are poisonous and deadly and often fatal. It must be remembered that wood-alcohol is easily vaporised. When subject to the heat of an automobile radiator there is, of course, an evaporation and the deadly fumes are given off." An additional warning comes from the Health Commissioner of Massachusetts, who says that he sees no advantage in methanol as an anti-freeze mixture, as found on the market, over denatured alcohol. "It is no cheaper, it is no more effective as an anti-freeze, it is far more poisonous, and its vapours have much less characteristic odour."

ACCIDENTAL DEATH.

An analysis of the 10,103 deaths from accidents in New York State during 1929 brings out some interesting comparisons. The proportion of males to females in this group is more than 2 to 1. The chief cause of accidental death above 1 year and over 65 years is the automobile. Among school-children it accounts for nearly one-half of all fatal accidents. The chief accident of babyhood is mechanical suffocation and that of old age is "falls." Burns reaches the place of prominence among accidents in the second year of life, accounting for 32 per cent. of all fatal accidents in that age-period. In the entire State accidents were responsible for 8·8 per cent. of all male deaths and for 4·0 per cent. of all female deaths. In the age-group 15–24 years 36 per cent. of all deaths were due to accident.

EUROPEAN TOUR.

The Interstate Postgraduate Medical Association of North America announces that its seventh European tour will be held this year from May 10th to July 11th. The party is due to leave Montreal on May 15th and arrive in Liverpool on the 22nd. After spending four and a half days in London they will visit Birmingham, Liverpool, Dublin, Glasgow, Edinburgh, and Manchester, and then proceed to the Continent via Amsterdam.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

DIETETIC RESTAURANTS.

ECONOMIC and financial crises go hand in hand with an increase of nervous disorders, and the post-war difficulties of bread-winning manifest themselves in gastric disturbances, including dyspepsia, hyper-acidity, and consequent gastric and duodenal ulcers. The number of those needing special diets has thus increased immensely, and since many of the sufferers are bachelors and spinsters and people who take their meals away from home a demand for dietetic restaurants has arisen. The health council of the city of Budapest, appreciating this public demand, is establishing in several districts dietetic kitchens where foods will be prepared under strict medical control. The first such dietetic restaurant was opened a short time ago, and is now crowded. It is under the control of Dr. Aladar Soos, lecturer on dietetics in the University, and any guest is served according to the prescription of his physician. During lunch and dinner a physician is always on duty to give advice, in case of necessity, on what to eat, and in special cases he tells the chef how to prepare the food. The meals are fairly cheap, so that even those with moderate income can avail themselves the boon of this restaurant. The price of a lunch is: 1st class, 1·50 pengö (1*s.*), and 2nd class, 1 pengö (8*d.*), while dinner costs 1·20–1·80 pengö.

THALLIUM POISONING.

Dr. Vasarhelyi has administered thallium by mouth to rats, dogs, and cats, and reports that when the hair began to fall out he found hyperkeratosis in the stratum corneum, minute abscesses under this stratum, and vacuolation of the stratum spinosum. The stratum papillare was tumefied, rich in blood, and here and there showed cellular infiltration. In a more advanced stage of the intoxication the sebaceous glands were structurally destroyed, the blood-vessels of the corium were highly dilated, and infiltration by pus cells extended also into the deeper layers of the skin. In many places also the hair follicles were invaded by pus cells. In the stage of complete baldness no particular changes were noted in the skin, apart from a remarkable increase of eosinophil cells. Thallium could be demonstrated in the urine, fæces, salivary glands, muscles, liver, and skin, but not in the thyroid, adrenal gland, or testis. He attributes thallium epilation to purulent inflammation of the skin.

DIETETIC TREATMENT OF TUBERCULOSIS OF THE SKIN.

Dr. Schlammadinger has lately described his experiments with treating skin tuberculosis by the Gerson-Sauerbruch-Herrmannsdorfer diet. Of eight patients treated for 6 to 12 months one could be declared as entirely cured; the lesions gave place to fine cicatricial tissue. The other seven patients also showed very remarkable improvement. The results were noteworthy, because these cases defied other therapeutic methods, including treatment with gold. Schlammadinger thinks, however, that his good results are partly attributable to change of environment, rest, good food, air, light, and in general better hygienic conditions. He finds that lupus patients treated by diet are much more susceptible to erysipelas than other lupus patients, and show a much stronger allergic reaction against tuberculin. According to Fornet this is because of a change in the acid-base equilibrium.

ROYAL MEDICAL BENEVOLENT FUND.—The ninety-fifth annual general meeting will be held in the lecture room of the Medical Society of London, 11, Chandos-street, Cavendish-square, W., on Tuesday, March 17th, at 5 P.M., Sir Thomas Barlow, the President, in the chair. The report and statement of accounts for the year ended Dec. 31st, 1930, will be submitted and the officials and committee of management for the ensuing year be chosen.

At two recent meetings of the committee 77 grants amounting to £1779, and 40 grants amounting to £947 were voted, making a total of £2726 during the first two months of this year. Of this sum £2218 was distributed as maintenance grants among 92 beneficaries whose small incomes required extra help in order that the necessities of life might be obtained. The balance was given to some who had broken down in health and to others who were in temporary difficulties. The following are particulars of a few of the cases recently helped:—

M.R.C.S., aged 75. Suffering from malignant disease of the prostate and bedridden for many months. Applicant and his wife, who is quite an old lady and who is worn out by nursing her husband, were found to be living from hand to mouth in very straitened circumstances. The local medical society has made a collection among its members to assist this old couple. The Fund voted £45.

M.R.C.S., aged 76. Applicant gave up practice after 38 years of work owing to ill-health. His practice was not a lucrative one and he brought up and educated six children, one of whom qualified in the medical profession. Owing to his heavy family expenses his savings on retirement were very small and he and his wife are practically penniless. The couple are now boarding with a son who is an electrician earning £300 a year; this extra burden has thrown the son into debt. The Fund voted £45.

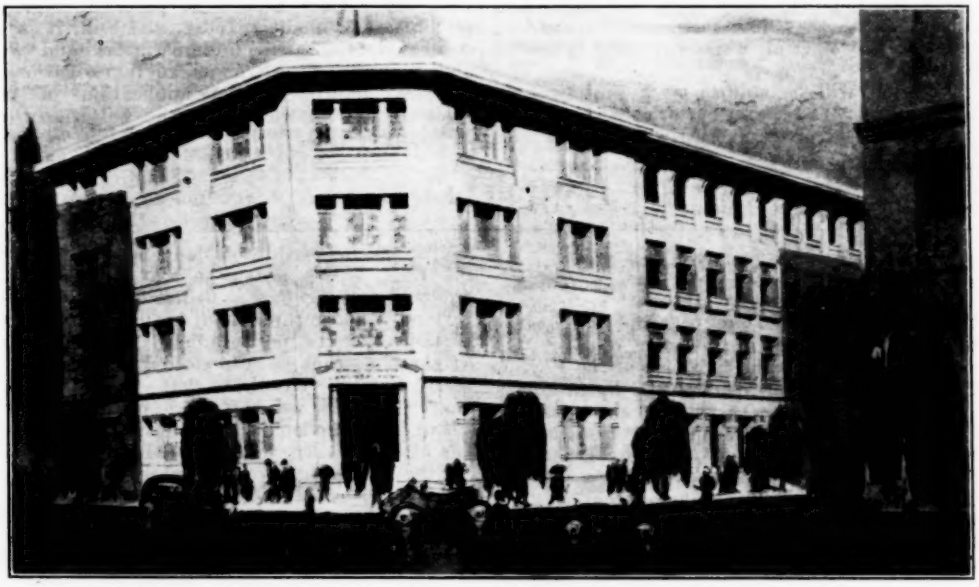
M.R.C.S., aged 67, married. Suffering from aortic disease and unable to work. The capital saved after 30 years of work was lost through no fault of the applicant, but through a business failure. Relations are contributing £100, and the wife has a private income of £25. The Fund voted £40.

Cheques should be forwarded to the hon. treasurer of the Fund, 11, Chandos-street, Cavendish-square, London, W.1.

AN ALL-INDIA INSTITUTE OF PUBLIC HEALTH.

THE ROCKEFELLER GIFT.

WE are now able to give an illustration of the Institute of Hygiene and Public Health which is rapidly rising opposite the School of Tropical Medicine in Calcutta, to be completed, if all goes well, by the end of the year, and opened for work early in 1932. Prior to 1920 medical graduates in India had to go abroad for systematic study of tropical medicine and hygiene, although in 1914 Sir Leonard Rogers had conceived the idea of establishing institutes for this purpose in Calcutta and Bombay. Circumstances prevented these views from coming into fruition, but Rogers's perseverance and enthusiasm, aided by the generosity of the Governments of India and Bengal and various private benefactions, brought about the opening in 1920 of the Calcutta school in which teaching and research were combined. A chair of hygiene was established, and a course of instruction arranged for the University diploma of public health. It was soon realised that this arrangement did not meet completely the need of India for workers highly trained in general hygiene as well as for specialists in some particular branch of public health. In his annual report as public health commissioner in 1925, Maj.-Gen. J. D. Graham dwelt on the increasing evidence that a considerable section of the Indian community was thinking seriously on public health problems. "This is a work," he said, "which has to be done for the benefit of Indians. To be effective it must carry conviction and establish its position against immemorial conservatism and tradition; it must therefore be done by Indians. It presents a grand and unlimited field for public health workers, but it is well to recognise that the improvement cannot be achieved when the expert labourers are too few in number . . . . Scientific knowledge in regard to the prevention of certain communicable diseases has far outstripped its application in the field." This view, repeatedly endorsed by Maj.-Gen. J. W. Megaw, the head of the school, was brought home to Dr. W. S. Carter, associate director of the Rockefeller Foundation, on his periodic tours of the Far East, with the result that he became deeply impressed with the necessity of establishing an All-India institute. Much of the teaching in basic subjects, such as bacteriology and protozoology, being common to the diplomas of public health and of tropical medicine, the advantages were obvious of Calcutta as a location for the institute, and of a site close to the school, where the basic subjects would continue to be taught, the institute being devoted to subjects especially related to Indian requirements. The Rockefeller Foundation offered to provide the cost of the site, and to build and equip an institute on the assurance of the Government of India to meet the cost of staff and maintenance after the building was handed over.



The Institute as it will appear on completion.

A site was acquired in July, 1930, and building commenced in September. A constructional committee composed of the public health commissioner with the Government of India, the surgeon-general with the Government of Bengal, the chief engineer with the same Government, the chairman of the Calcutta Improvement Trust, and the accountant-general, Bengal, was appointed to arrange for its construction. Lieut.-Colonel A. D. Stewart, professor of hygiene in the Calcutta School of Tropical Medicine, was appointed director-designate of the new institute, and Lieut.-Colonel A. A. E. Baptist, assistant director, to superintend the construction and equipment. The building was entrusted to Messrs. Martin and Co., Calcutta, who engaged Mr. T. Edmondson as supervising architect. The site practically adjoins the school, with which it will harmonise in design. The plan is based on a unit room of 25 ft. by 21 ft. The building, which is four-storied and E-shaped, the long limb being in the centre, will have six sections: (1) public health administration; (2) sanitary

engineering; (3) vital statistics and epidemiology; (4) biochemistry and nutrition; (5) malariology and rural hygiene; and (6) maternity and child welfare and school hygiene. Each section will be allotted one unit room for the head of the section and two unit rooms for the workers. The working sections are placed in the central limb of the building facing north with unimpeded north light. In the west block are the administrative rooms, lecture theatre, practical class rooms, museum, and an auditorium to seat 200. The eastern limb will house store rooms, common room, and lunch room for students, spare working rooms, and lavatories; a separate annexe provides for an animal room on each floor. The library is in the centre block on the top floor. Three unit rooms on each floor and the library and reading room will be provided with conditioned air during the hot months of the year. The head of each section will thus have a cooled room, and there will be a spare cooled unit room on each floor where workers on that floor may work in comfort, or engage in any special work requiring a cooled atmosphere.

Each section will be staffed by a professor, an assistant professor, and laboratory or other assistants. The primary object of the institute being to bridge over the gulf between the results achieved by pure research and their practical application to the community, its function will be primarily instruction. The subjects for the D.P.H. Part I. will still be taught by the staff of the tropical school, but the specialised subjects in public health will be taken by the staff of the institute. The examination for the D.P.H. is conducted by the University of Calcutta, with which the new institute will in due course be affiliated. It is also intended to provide short post-graduate instruction in special subjects for public health workers desiring to pursue advanced study, and it is probable that the University will institute a higher degree or doctorate in public health science which will require a year's training in the institute in some special branch of public health science. Special courses in child welfare and public health nursing may be instituted for women graduates and nurses respectively. The institute will be coördinated with the various aspects of practical hygiene and public health all over India, and will, it is hoped, render assistance to administrators and workers, and institute as well as make investigations of a practical nature in the application of medical research and knowledge for the betterment of the Indian people.

OBITUARY

HUGH PERCY DUNN, F.R.C.S. Eng.,

CONSULTING OPHTHALMIC SURGEON TO THE WEST LONDON HOSPITAL.

THE death of Mr. Percy Dunn occurred on Monday, March 2nd, at Beckenham, at the age of 76.

Hugh Percy Dunn was the third son of the Rev. J. Woodham Dunn, vicar of Warkworth, Northumberland, while his mother was the daughter of the Rev. Luke Yarker, a Yorkshire clergyman. He received his early education at the Richmond (Yorkshire) Grammar School, but was for a time at the Clapham Grammar School before entering at St. Bartholomew's Hospital in 1873. He qualified in 1876 as M.R.C.S. Eng., a diploma which at that time covered the courses necessary for registration in medicine and obstetrics also, and proceeded to hold various resident appointments. He took the F.R.C.S. in 1880, when he decided to specialise in ophthalmology, and obtained an early appointment at the West London Hospital, which at that time had a surgical staff composed of St. Bartholomew's Hospital men. The surgeon for diseases of the eye was the late Mr. Bowater Vernon, and Dunn, who had discharged the office of pathologist at the West London was appointed assistant ophthalmologist in 1885. He succeeded Mr. Vernon in full office in 1898, and for the ensuing 16 years was senior ophthalmological surgeon to the hospital, a post from which he retired in 1914, when he was unanimously elected consulting surgeon. Both in his hospital work and in his private practice he showed himself thoroughly competent as an operator, while he published many clinical papers recording his experiences over a large range of practice.

But apart from his scientific work and writings munn was a well-known journalist. He used his Dedical knowledge modestly as well as wisely for the dissemination of sound teaching to public audiences, and several of his papers, notably his essays in the *Nineteenth Century*, were marked by a bold grasp of essentials when conveying valuable lessons to laymen. He was for many years editor of the *West London Medical Journal*, of the *Medical Press and Circular*, and of the Fellowship of Medicine *Bulletin*, while at the time of his death he was interested in the production of the *Franco-British Medical Review*.

Dunn was also throughout his life a stalwart worker in the cause of post-graduate medical education. At the time that he was elected to the staff of the West London Hospital that forceful character, Charles Keetley, was engaged in organising a medical school in connexion with the hospital, and, although this attempt failed, it undoubtedly prepared the way for the successful post-graduate school known as the West London Post-Graduate College, with which the late Leonard Bidwell and Dunn were closely associated.

A personal and intimate friend of Percy Dunn, of many years' standing, testifies to some of his qualities in the following words: "Dunn's outstanding characteristic was an uncompromising loyalty to the persons he liked and the causes he approved of—a loyalty, indeed, which was sometimes almost embarrassing. He was contentious, quick-tempered in argument, but fair, and always ready to listen as well as to talk, a good and cheery companion up to the last, and I was with him shortly before his death. He preserved the capacity for enjoyment of simple pleasures. He was among the least sophisticated men of his years and experience one could meet. He was kindness personified when his interests were engaged, and would think no trouble too great if thereby he could help a friend, a statement that the writer can vouch for personally. He was a worker of remarkable energy and absolutely died in harness. In former days he was a mighty bicycle rider and many thousands of miles he had pedalled with a boon companion in this country and on the Continent."

DOUGLAS DREW, M.D. Lond., F.R.C.S. Eng.

WE have already briefly announced the death of Dr. Douglas Drew, which occurred at his country house near Bexhill on Feb. 25th in his sixty-fourth year. Although he had lived for so many years in

semi-retirement, his interest and practical coöperation in surgical work had not abated, and the news of his death has roused much sympathy with a brave sufferer.

Douglas Drew received his medical education at University College Hospital, where, after holding certain resident appointments, he became surgical registrar, when he fell under the notice of Victor Horsley, to whom, as a private assistant, he owed his early advancement. Drew did not obtain the post on the staff of University College which he coveted, but he established in the minds of his colleagues and of the students a reputation for ability as a teacher and capacity as a diagnostician. The vacancy on the staff for which he was candidate fell to Rupert Bucknall, whose life was so sadly brief, but by that time Drew had found other outlets for his talents. He was appointed assistant surgeon to the Queen's Hospital for Children, and to the Hospital for Women in Soho, and at both places showed the qualities which were expected of him—care, knowledge, and technical skill. The amount of hard work he put in at these institutions was remarkable, considering that for a considerable period he suffered from obstinate gastric ulceration. In 1914 he returned to the country, but did not wholly withdraw from professional work; that had been his intention when he took the house at Cooden, but the retirement was only partial, for he carried on a considerable amount of work as a consultant and operating surgeon in the Bexhill district. The tribute to his skill and character which appeared in the *Times*, from Dr. Eric Pritchard, immediately upon Drew's death, well represented the view of Drew's professional colleagues and friends. He was a brave man who faced his own acute sufferings for many years while doing good for his generation.

Dr. Charles Bolton writes: "Douglas Drew held the post of surgical registrar at University College Hospital when I was a student, and there can be no doubt that he fully maintained the reputation of this post both by the influence which he exerted on the students and by his ability as a teacher. He was a good surgical diagnostician and enthusiastic in his work. He was not appointed to the staff, as the next surgical vacancy, for which he was a candidate, was filled by that brilliant young surgeon, Rupert Bucknall, whose career was cut short in such an untimely fashion. Drew was my colleague on the staff of the Queen's Hospital for Children a few years later. He had developed a good practice and was an expert operator. The staff of this little hospital got on remarkably well together, and Drew was popular with us all. He was a hard worker, and it is remarkable that he could do what he did with so much energy, regularity, and enthusiasm, when one considers that he suffered for 23 years from the painful and debilitating disease, which finally killed him."

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 28TH, 1931.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 247 (last week 250); scarlet fever, 1618; diphtheria, 1166; enteric fever, 54; pneumonia, 2706 (last week 2501); puerperal fever, 50; puerperal pyrexia, 123; cerebro-spinal fever, 73 (last week, 78); acute poliomyelitis, 1; encephalitis lethargica, 14; dysentery, 9; ophthalmia neonatorum, 96. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on March 3rd–4th was as follows: Small-pox, 188 under treatment, 1 under observation (last week 219 and 5 respectively); scarlet fever, 1423; diphtheria, 1925; enteric fever, 239; measles, 125; whooping-cough, 367; puerperal fever, 30 (plus 15 babies); encephalitis lethargica, 122; poliomyelitis, 1; "other diseases," 157. At St. Margaret's Hospital there were 12 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 70 (2) from measles, 4 (0) from scarlet fever, 59 (11) from whooping-cough, 42 (8) from diphtheria, 52 (15) from diarrhœa and enteritis under two years, and 546 (79) from influenza. The figures in parentheses are those for London itself.

Five deaths from meningococcal meningitis occurred in London—1 under 1 year, 2 from 15–25 years, 1 from 45–55 years, and 1 from 55–65 years. The fatal cases of enteric fever outside London occurred at Walthamstow and Hull. Sixteen fatal cases of measles were reported from Liverpool, 9 from Newcastle-on-Tyne, 6 each from Hull and Cardiff, 5 from Birmingham. Liverpool reported 6 deaths from whooping-cough, Manchester 4. Diphtheria claimed 6 victims at Liverpool, 3 at Hull. The 467 fatal cases of influenza outside London are scattered over 81 great towns: 48 were reported from Manchester, 19 from Nottingham, 16 each from Birmingham, Stockport, and Bradford, 15 from Blackburn, 14 from Leeds, 13 from Bolton, 12 each from Salford and Newport, 10 each from Croydon and Sheffield, 9 each from West Ham, Ilford, Liverpool, and Swansea, 8 from Hull, 7 each from Leyton, Stoke-on-Trent, and Cardiff, 6 each from Portsmouth, Plymouth, Walsall, and Middlesbrough.

The number of stillbirths notified during the week was 282 (corresponding to a rate of 41 per 1000 births), including 47 in London.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. H. H. Babington is appointed to *Hood*.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Sub-Lts. R. W. Riddle and H. A. Lockhart to be Surg. Sub-Lts.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. C. E. W. S. Fawcett retires on ret. pay.

Maj. & Bt. Lt.-Col. (temp. Lt.-Col.) H. M. J. Perry to be Lt.-Col., vice Lt.-Col. Fawcett.

Maj. O. R. McEwen to be temp. Lt.-Col.

ARMY RESERVE OF OFFICERS.

Capt. J. E. Rusby resigns his commn., and retains the rank of Capt.

TERRITORIAL ARMY.

Lt. J. L. Turpie to be Capt.

RESERVE OF AIR FORCE OFFICERS.

Flight Lt. G. R. Nodwell relinquishes his commission on completion of service.

INDIAN MEDICAL SERVICE.

Lt.-Col. (Bt. Col.) T. G. F. Paterson to be Col.

Lt.-Col. F. C. Rogers retires.

COLONIAL MEDICAL SERVICE.

The following appointments have been made: Dr. A. L. McFarlane, Government Medical Officer, Jamaica; Dr. E. S. Adderley, Dr. H. T. Flannery, and Dr. J. Taylor, Medical Officers, Northern Rhodesia; Dr. E. Morris, Lady Medical Officer, Malayan Medical Service, and Dr. P. J. O'Shaughnessy, Medical Officer, Straits Settlement; Dr. J. M. Scott, Medical Officer, West African Medical Service; Dr. H. D. Weatherhead, Medical Officer, Antigua, to be Assistant Medical Officer, British Guiana.

LONDON HOMŒOPATHIC HOSPITAL.—Last year there were 1801 in-patients, and the 62,560 out-patient attendances were the largest but one on record. The Hospital Saving Association again increased its quota of patients to 592 in-patients and 3582 out-patients; the payments made on their behalf amounted to £4179. The new wing is to be opened in May by the Duke and Duchess of York, and further extensions are in progress.

CORRESPONDENCE

THE IRRADIATION OF SCHOOL-CHILDREN.

To the Editor of THE LANCET.

SIR,—The Committee on the Biological Action of Light, when first appointed by the Medical Research Council, was presided over by Sir William Bayliss and contained, in addition to Dr. Dale, Prof. Dreyer, and Captain Douglas, two clinicians, eminent light therapists, Dr. Sequeira and Sir Henry Gauvain—a sympathetic committee to work with.

After the death of Sir William Bayliss and the retirement to Kenya of Dr. Sequeira, three distinguished physicists, experts in the science but not the therapy of light, were added to the Committee, one of whom became its chairman; no medical expert in light treatment was added, and the Committee met at times at which Sir Henry Gauvain could not attend. The temperament of the Committee was changed. An official view had by this time crystallised out, which is repeated in the letters of Dr. Dale and Captain Douglas (THE LANCET, March 7th)—viz: "the equivalence of ultra-violet radiation to the administration of vitamin D." This dogma, so far as I know, is not accepted by any European, American, or British authority in artificial light treatment; how the Committee unguided by any such authority favoured this view the letter of my late colleagues shows.

As is clearly set out in the report of the Medical Research Council, 1929 (page 115), Dr. Dora Colebrook worked under direction of the Committee and not under me; but as set forth on page 43, Mr. Angus, a physicist, who has done excellent work in my department at the National Institute for Medical Research, "superintended the installation of arc lamps, used for the inquiry conducted by Dr. Colebrook at Willesden, and worked out scales of increasing doses."

Dr. Colebrook, I believe, consulted Dr. Bourdillon, who had just joined the department, for physico-chemical work on vitamin D; she did not consult Dr. Eidinow, who had coöperated with me for five years as a voluntary worker, and was expert in light therapy. As a member of the Committee I agreed with the location of the school as proposed by Dr. Colebrook, and the details of the test.

When Dr. Colebrook was introduced to me as wanting to begin research work, and to study in particular light treatment, I arranged for her to attend in succession three clinics where such treatment had been initiated by me. The reports which I received from each of these clinics showed that there was disagreement between her valuation of light treatment and that of the medical officers. After this preliminary experience Dr. Colebrook carried out the tests at the Willesden school with an independence which should be the right of all researchers. I believe I was the only member of the Committee who visited the school and saw a test treatment in progress. I had then, and have now, no criticism to make of her method other than the possibility of an overdosage with ultra-violet rays. The arrangements at the school were excellent.

At the end of her inquiry an oral statement was made by Dr. Colebrook to the Committee, and the Committee decided that her report, which lay on the table, should be printed: (I concurred with this decision). The report had not been read, I believe, by any of the Committee.

In all similar cases with which I am familiar such a report is put into type and circulated among the members of the Committee for comment before publication—an obvious comment on the negative result was "how remarkable that all the mothers of Willesden should give their children a sufficiency of vitamin D." Not only was the customary course not followed, but with the securing of this, her first essay in research, the Committee ended; it was never summoned to meet again. An official criticism of artificial light treatment was then published in the Medical Research Council's report, in which the negative evidence obtained by Dr. Colebrook was stressed and this was months before her report was published.

In the face of other evidence Dr. Colebrook's observations, however faithfully carried out, and however well designed by the Committee, needed to be tested by further trials in other schools and with other methods of light treatment. Dr. A. P. Laurie and I, therefore, carried out the Derby trial, reported in THE LANCET of Jan. 24th.

At the time when the Committee ceased to be summoned, Dr. Eidinow and I were obtaining evidence that rabbits are partially, and in some cases even wholly, protected from an otherwise lethal dose of staphylococcus by previous exposure to light, and that such protection was not offered by addition of vitamin D or A to their diet. The completion of this work was made difficult as the Council terminated their leave to Dr. Eidinow to work in my department.

Any criticisms made in the report of Dr. Laurie and myself were directed merely towards showing the need of future trials, and to question dogmatic official statements.

I am, Sir, yours faithfully,

LEONARD HILL,
Hon. Advisor in Research to the London Light and Electrical Clinic.

March 9th, 1931.

SCHARLIEB MEMORIAL.

To the Editor of THE LANCET.

SIR,—The proposed memorial to Dame Mary Scharlieb is to take the form of a ward in the new gynæcological and obstetrical unit of the Royal Free Hospital, which will bear her name and be for ever associated with the work in which she was the great and beneficent pioneer. Mary Scharlieb was a student of the London School of Medicine for Women and the Royal Free Hospital from 1879–82. She was appointed gynæcologist to the hospital and was the first woman to be elected to the honorary visiting staff of this or any other general hospital in the kingdom. She filled the post with great distinction from 1902–08. She was lecturer in midwifery, 1887–1913, and president of the School from 1918–30. A year before her death on Nov. 21st, 1930, it was decided that her name should be attached to the new unit, and the "Mary Scharlieb Ward" will fittingly connect her own work for women with the hope and healing to be brought to future generations of patients.

We ask those who appreciate the work which Mary Scharlieb did for humanity, and in particular for motherhood, to help in building this ward. Subscriptions, including gifts from her family who earnestly desire the success of this memorial, already amount to £620, and further donations should be

sent to the Lady Sybil Smith, hon. treasurer of the Appeal Fund, 8, Hunter-street, London, W.C.1.

We are, Sir, yours faithfully,

Signed for the Committee.
GERTRUDE KINNELL (Chairman).
A. LOUISE MCILROY (Convener of the Fund).
FLORENCE E. BARRETT.
ELIZABETH BOLTON.
JANET AITKEN.
WINIFRED C. CULLIS.

March 10th, 1931.

GASTRIC SYPHILIS.

To the Editor of THE LANCET.

SIR,—In an annotation in your issue of Feb. 14th you comment on a paper by Eusterman of the Mayo Clinic. Since Surgeon-Commander R. J. G. Parnell asks: "Is it justifiable to infer that a certain percentage of gastric ulcers is specific?" I would like to refer to a paper of mine on Organic Gastric Syphilis published in the *British Medical Journal* (Nov. 8th, 1930). In my paper the actual number of cases is small compared with the number referred to by Eusterman, but the data on which they were accepted as syphilitic were much more exacting. In that paper it was stated that I was of the Royal Infirmary, Edinburgh, but it should have been Royal Infirmary, Glasgow. I am, Sir, yours faithfully,

Glasgow, March 5th, 1931. DAVID SMITH.

THE BRIGHTON RHEUMATISM CLINIC.

To the Editor of THE LANCET.

SIR,—This clinic was opened at the Public Health Offices, Brighton, on Feb. 26th, 1930. Treatment is entirely free, and consists of weekly injections of stock vaccines. The vaccines are prepared in the laboratory of Dr. Warren Crowe and are the same as those used at the Charterhouse Clinic.[1] During the first year 172 patients attended, suffering from rheumatoid arthritis, osteo-arthritis, fibrositis, lumbago, sciatica and other forms of chronic rheumatic disease. No case, however crippled, and several were unable to get up the stairs or out of their chairs, has been refused.

Of the 172 patients, 112 have so far been treated for six weeks or more, and of these the subsequent history has been followed up in 100 cases. The results have been tabulated under three headings: much better (including cured); definitely better; no better.

Class 1.	Class 2.	Class 3.	Total.
Much better (including cured).	Definitely better.	No better.	
39 (39%)	51 (51%)	10 (10%)	100

Total of Classes 1 and 2 = 90 (90%). Class 3 = 10 (10%).

If the 12 whose subsequent history has not been followed up are included under the heading of "no better," and we have no reason for supposing that all 12 are no better, the following figures are obtained:—

Class 1.	Class 2.	Class 3.	Total.
Much better (including cured).	Definitely better.	No better.	
39 (35·5%)	51 (45%)	22 (19·5%)	112

Total of Classes 1 and 2 = 90 (80·5%). Class 3 = 22 (19·5%).

[1] See THE LANCET, 1930, ii., 1151.

The average age of those in Class 1 was 51 (the youngest was 20 and the oldest 87). In Class 2, 53·5 (youngest 17, oldest 75). In Class 3, 54·5 (youngest 31, oldest 68).

We are of the opinion that whatever the cause of rheumatism may be, "the secondary infection" is almost certainly due to the streptococcus and the staphylococcus.

The vaccines used consist of 157 strains of streptococci and two types of staphylococci. Of the latter one is *Staphylococcus albus*, which differs from the ordinary *Staphylococcus albus epidermidis* in its cultural characteristics when grown on Fleming's medium and in its reaction to milk. The other is a *Staphylococcus aureus* which differs from the more common *Staphylococcus aureus* also in its reaction to milk.

Routine carried out.—Previous experience had shown that the great majority of patients were sensitive to one or both of these vaccines and that a small alteration in the dosage might make all the difference between no reaction and a marked reaction. Therefore it became obvious that a definite routine must be adhered to, as subsequent doses must for the most part depend upon the patient's reaction to the previous dose.

Septic foci.—It was decided to pay no attention to septic foci, unless a glaring example, for instance, obvious pyorrhœa in a young person, presented itself. This was done for four reasons. Firstly, because it was considered as the result of previous experience that good results could be obtained even in the presence of septic foci. Secondly, the cost of bacteriological, radiological, and dental investigations rendered the search for foci prohibitive, especially having in mind the difficulty of deciding whether any particular focus was the specific one. Thirdly, it was considered that in the more severe cases septic foci were best left undisturbed until the patient's resistance had been sufficiently raised to enable the foci to be disturbed without running the risk of promoting a severe generalised reaction. And lastly, it was felt that if patients were to be subjected to all kinds of investigations they might be chary of presenting themselves for treatment and so defeat an end which was in view—namely, to show that there was an effective form of treatment within easy reach of the poor.

Details of treatment.—At the first treatment the patient was given 100,000 streptococci, and at the second 100,000 staphylococci. At the third and subsequent treatments the two vaccines were combined.

Of the first 87 patients so treated, it was found that after the third dose only ten were able to tolerate a dose as large as this without the production of a reaction—that is, a reaction which was considered excessive.

A number of cases could only tolerate doses of hundreds of organisms. These minute doses might suggest that the reaction was due to protein therapy, but if this is so the protein is specific and differs in the two vaccines. For it was found that one case reacted to the streptococcal vaccine and not to the staphylococcal and vice versa.

By separating the vaccines for the two initial doses the following facts arose. Of the 87 cases, 13 reacted to the initial dose of staphylococci only, and in all 13 the preponderating signs and symptoms were those of rheumatoid arthritis. Of those cases presenting no obvious signs of rheumatoid arthritis

alone, six reacted only to the staphylococcus. Of 17 cases of mixed arthritis, 15 reacted more to the staphylococcus and two to the streptococcus. Of 52 whose rheumatism was mostly of the osteo-arthritic and fibrositic types, 11 reacted to the streptococcus only, and 41 reacted equally to both types of vaccine. Of these 41 only 11 reacted to neither of the two initial doses, and of these 11 only two have never definitely reacted to any dose up to two million, nevertheless the condition of both has considerably improved. We found that on the whole the arthritic type of case derived more benefit from the treatment than did the fibrositic.

In conclusion, we agree with those in charge of the Charterhouse Clinic that the method of treatment of the chronic rheumatic diseases by stock vaccine is one from which patients may be expected to derive benefit. We also agree with their suggestion that stock vaccine treatment could be applied on a large scale in the routine treatment of rheumatic patients, nor can we see why it should not meet with a success equal to that here recorded.

We are, Sir, yours faithfully,

F. E. GRAHAM-BONNALIE,
E. J. M. GALLAGHER,
V. E. CLAXTON.

Hove, Sussex, March 2nd, 1931.

NORD-SUD TOURS.

To the Editor of THE LANCET.

SIR,—By the merest chance I heard last spring of an International Medical Tour, organised by the Italian Government through the Italian State Railways and the E.N.I.T., and a brief note may be of interest to readers of THE LANCET. Similar tours are now organised in France and Spain, but the Italian tour is noteworthy in three particulars: the unique beauty of the country toured; the very small "busman's holiday" factor; and the remarkable comfort and great efficiency with which it is organised by Prof. Guido Ruata, of Rome.

The tour is not advertised, for it is limited to 150 members, of which the English-speaking group can comprise 40 or 50, but it deserves to be more widely known in the profession. Last year the district toured included the central Dolomites, Lido of Venice, Grado, Abbazia, and Brioni, on the Adriatic, and the trip ended at Salsomaggiore after 17 most interesting and amusing days. The eighth tour begins at Rome on Sept. 19th next, and includes the Naples Riviera, Capri, Sorrento, Amalfi, &c., and after visiting Taormina ends at Palermo on Oct. 2nd. The cost of the tour is a smaller item, as a rule, than the travel fares there and back. The writer, who has no interest in the tour beyond that of a participant, had always sedulously shunned conducted tours of all kinds, and joined the seventh tour rather doubtfully, because it was warmly recommended by a friend who had done it for five or six years, and it fitted neatly with a cancelled holiday plan.

Prof. Ruata tells me in reply to a letter, that he will be in London for the last week of March and will give full details with pleasure to anyone interested, through Messrs. Thos. Cook and Sons' head office, Berkeley-street, London, W.

I am, Sir, yours faithfully,

J. HENRY STORMONT.

Richmond-road, Worthing, March 9th, 1931.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

ARMY ESTIMATES.

In the House of Commons on Tuesday, March 10th, Mr. T. SHAW (Secretary of State for War) moved that the Speaker do leave the chair on the House going into Committee of Supply on the Army Estimates. He said that the net saving on this year's estimates amounted to £570,000. Last June all the commands were asked very carefully to consider every item of expenditure, and to economise wherever economy could be achieved without definite disservice to the Service. Recommendations have been received from the commands which had been acted upon as far as possible. There had been a very considerable increase during the past few months in the number of recruits who had come into the Army. Between October, 1929, and the end of September, 1930, 66,717 men offered themselves for the Army. Some 52 per cent. of these men could not be accepted owing to their bad physical condition, a fact which was matter for profound regret. Serious diseases that used to be very prevalent in the Army had diminished in a very marked degree. In 1913 the incidence of drunkenness was 426; in 1930 it was 107. As regarded barrack accommodation there had been a great accumulation for many years of necessary work to be done. He was afraid that the country would have to be in a much more prosperous position if they were to be able to take all the work in hand at once. The programme would have to be a gradual one, but by degrees these remnants of a past age were being removed.

EXPERIMENTS ON ANIMALS AT PORTON.

Some degree of interest had been aroused in the House in regard to Porton, which was an establishment which existed for studying the best methods of defence against poison gas. There were experiments on animals at Porton, but wild statements had been made in the press as to what went on there. He assured the House that it was quite untrue that there was torture in the sense of violent pain being wantonly inflicted on animals. So far as he knew there was no one concerned who would dream of inflicting unnecessary pain on any living thing. The question which he had had to solve as the person responsible for ministerial policy was this: "Are you prepared, if it is demonstrated to you that, by an experiment on an animal you might be able to devise a means of saving enormous human suffering, to face such experiment?" He answered that question in the affirmative. He was satisfied that everything was done, so far as it could be done, to avoid suffering, and that when any animal showed signs of great pain it was at once painlessly destroyed. This was a service which was common to the Navy and the Air Force, as well as to the Army, but he took his full responsibility, as Secretary of State for War, for its continuation. He would do his best to see that it was continued on the same lines without the infliction of pain, but with the one object of saving human suffering, which might occur if the experiments were not carried out.

REMUNERATION OF OFFICERS IN THE R.A.M.C.

Major TRYON said that when they tried to enlist the healthiest people in the country, it would be a great pity if they were not provided with the very best medical attention in the Army. There was, at present, a great shortage of medical officers, and he was glad that the Secretary for War viewed that position with great concern.

Dr. HASTINGS said that there were two reasons for the

falling off in professional interest in the Army Medical Corps. One was that the Army now provided a very healthy life, and the other was that the remuneration of officers was small. Owing to the panel service, a doctor, by putting up a brass plate in an industrial area could, in a year or two, make a better salary than he could obtain in the Army. The solution of the difficulty could only be found in the amalgamation of the medical services of the three fighting forces and the medical services of the other State Departments into one comprehensive medical service. Referring to the Officers' Training Corps, Dr. Hastings said it was wrong to spend public money on the military training of boys of the tender age of 15 in the public schools. The training was, in fact, compulsory. It was bad for the boys who joined and equally bad for the boys who stood out. The boy who enjoyed strutting about in military uniform would not necessarily make the best officer. Boys trained in physics, chemistry, and possibly even bacteriology and other sciences as well as mathematics, would be of most use in the Army in the future. The main objection to the O.T.C. was that it gave a boy an entirely wrong idea of the meaning of war.

C3 RECRUITS.

Mr. MACPHERSON said it was a sad comment on present-day recruiting that 52 per cent. of the recruits who offered themselves belonged to a C3 population. The House of Commons paid a great deal of attention to the question of housing for the civil population. He had been astonished, however, to find how utterly inadequate the barrack accommodation in the Army was at the present time. It might well be that the slum conditions obtaining in barracks were to some extent responsible for the outbreak of spotted fever at Aldershot. The Secretary of State for War had said that in view of the present financial stringency he could only deal out a few pounds this year—less, in fact, than last year, to improve existing barracks—but the right hon. gentleman admitted that the conditions of some barracks were antiquated and a danger to the health of the troops. He would urge the Secretary of State to divert some of the money at his disposal, and which might, owing to the rapid advance of science be wasted, to improving the barrack accommodation. Although he (Mr. Macpherson) was a civilian he happened to know a great deal about the Royal Army Medical Corps. The present condition of that corps was extraordinary. He could not understand how a corps which had such a fine reputation, and which was so much sought after as a profession before the war, should have become such a Cinderella. He was told that there was no longer any competition to enter that service. About 50 vacancies were advertised every year, but sufficient applications could not be got to fill those vacancies. That was an extraordinary state of affairs. He was told that out of 600 officers, 500 were majors and 100 were subalterns. The 500 majors had to do subalterns' work, which was unthinkable. Surely something must be done to set this position right. If the health of the Army was to be properly looked after they could not have a discontented and chaotic corps of this kind. He was told that at present there was no chance of promotion; the pensions and allowances were miserable; and no special grants were made for specialist services. Speaking as a civilian, he thought that the State could not allow this corps to remain in such a chaotic condition.

REPLY TO THE DEBATE.

Mr. SANDERS (Financial Secretary to the War Office), replying to the debate, said that he had taken the trouble to visit a number of the barracks to see their general condition. He asked the House not to exaggerate in regard to the general housing condition of the soldiers. He had seen some most excellent quarters, especially for the married soldiers, in London. There were, it was true, a number of bad spots. Of the total amount which would be spent on buildings in connexion with barracks, the War Office intended this year to spend £148,000 on married quarters alone, because they were most urgent. With regard to the scarcity of medical officers, there were 173 officers short compared with the proper establishment—namely, 823. The foreign establishment was kept up and the Indian establishment also; the shortage fell entirely on the home establishment. Everyone agreed that this shortage was a very serious matter, and several of his predecessors at the War Office had been concerned with the problem. It was a problem which affected not only the War Office, but the Admiralty and the Air Ministry. An Inter-Departmental Committee was being set up by the three Services with the object of finding some solution of the problem. He held the personal view that it was mainly a matter of money. It was a question of finding some new attraction to the Army which, in these days, appeared to consist mainly of money. That brought up other questions which they would have to take into consideration. If the rates of pay of the Army Medical Corps were increased, other Corps and departments and classes in the Army might also demand that they should be put on the same level. Were doctors to have special privileges? All those matters would have to be considered in the light of the needs of the three Services. He assured the House that this was a matter in which the Secretary for War was taking particular interest, and he hoped to be able to find a solution. The question had been raised as to whether specialist pay was given to the Royal Army Medical Corps. He was informed that there were 107 members of the R.A.M.C. who received specialist pay of 5*s*. per day extra.

The motion that the Speaker do leave the chair was agreed to, and the House went into Committee on the Army Estimates.

Lieut.-Colonel FREMANTLE said the question of providing medical officers for the Army was causing the gravest possible concern. It seemed to those who understood the position that they were facing headlong disaster.

HOUSE OF LORDS.

TUESDAY, MARCH 3RD.

YARMOUTH NAVAL HOSPITAL BILL.

Lord AMULREE (Secretary of State for Air), in moving the second reading of the Yarmouth Naval Hospital Bill, said the Royal Naval Hospital at Yarmouth had had a chequered history. It was completed in 1811 at a cost of £120,000 to receive naval personnel wounded during the war with France, but no naval wounded ever arrived. It was afterwards turned into a barracks. In 1844 it became a military lunatic asylum for ten years, and was subsequently used as a convalescent home for soldiers. In 1865 the Admiralty again claimed the building for the reception of naval lunatics. It had been continuously used by the Admiralty as a mental hospital since that date.

RECEPTION OF LUNATICS AT THE HOSPITAL.

A serious difficulty, however, had arisen. During the nineteenth century the Navy and Army dealt with their own lunatics in Service hospitals. The Lunacy Act, 1842, gave the Lunacy Commissioners the right of inspection of asylums specifically referred to as Royal naval and military asylums, and other asylums for the reception of insane persons, including the Royal Naval Hospital at Yarmouth. The 1842 Act was repealed by a further Act passed in 1845 and containing provisions which were deemed to include naval and military hospitals. In 1889 and 1890 further changes in the lunacy law were enacted. The Act of 1889 did not interfere with the provisions in the Act of 1845, but before it came into force it was repealed, along with other Acts, by the Act of 1890. The 1890 Act was a Consolidation Act. It repealed the Act of 1845 without making any specific provision for naval or military hospitals for the reception of insane persons. But nevertheless the

Yarmouth hospital continued to be used for that purpose. Twenty years after the passing of the Act of 1890 doubts were raised for the first time about the legal position of the hospital as a place for the reception of mental patients. It was clear that the institution did not come within the definition of a lunatic asylum, licensed house, or licensed hospital under the Act of 1890—and those were the only places now authorised to receive mental patients. There were many legal points which made the whole problem very puzzling. The question whether the hospital should be discontinued as a mental hospital, or whether fresh legislative powers should be obtained, was under the consideration of the Admiralty when the Great War broke out. On the outbreak of hostilities the question was allowed to remain in abeyance.

LEGAL DOUBTS WILL BE DISPERSED.

During the war arrangements were made for the reception of ex-naval patients chargeable to the Ministry of Pensions. The Admiralty had now carefully reviewed the whole matter and had resolved to proceed with this Bill in order to put all legal doubts at rest. The Scottish Office and the Government of Northern Ireland had agreed to the Bill. The Admiralty took the view that great hardship would be entailed by the dispersal of the present patients in the hospital. The accommodation throughout the country for mental patients was extremely limited and difficulties would arise if the Yarmouth hospital was no longer available. The Ministry of Pensions were also extremely anxious to increase the number of patients which they sent for treatment there. If pensions patients were sent to their own county asylums the cost to the State, so far as could be ascertained, would be higher than if the patients were treated at Yarmouth. At present there were 119 patients in the hospital, and the normal peace-time accommodation was 213 patients. That number could be increased to 260 by reorganisation and certain structural alterations and additions. The number of patients which would be transferred to the hospital by the Ministry of Pensions would be from 100 to 120. The Bill also provided for the reception of voluntary patients. The provisions were similar to those contained in the Mental Treatment Act, 1929. The insertion of this provision had been deemed advisable in view of the advance of medical science and the possibility of treatment of mental disabilities at a non-certifiable stage. No voluntary patients had hitherto been received at Yarmouth. Under Clause 8 it was intended to indemnify those in charge of the hospital, and their subordinates, in connexion with past actions and to protect such persons in putting this Act into force.

The Bill was read a second time, and after being considered in Committee on March 10th was reported to the House.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 4TH.

Women Medical Practitioners in the Gold Coast.

Mr. RENNIE SMITH asked the Under Secretary for the Colonies how many lady doctors were employed in the Gold Coast; what were the facilities for training; what steps were being taken to meet the demand for lady doctors; and to what extent European lady doctors might be employed.—Dr. SHIELS replied: There are at present 12 lady medical officers in the service of the Gold Coast Government, 11 of whom are Europeans, and one is an African. There are also, I believe, a few European lady doctors working with missionary societies in the colony. There are no facilities in the Gold Coast for students of either sex to undergo the training necessary to enable them to qualify as medical practitioners locally; but, in the case of Government medical officers, the same facilities for post-graduate training are provided for both men and women doctors. As regards the third part of the question, there is no difficulty in meeting the demand for lady medical officers for Government service.

THURSDAY, MARCH 5TH.

Hygiene Lessons in Schools.

Dr. HASTINGS asked the President of the Board of Education the approximate number of schools in which lessons founded on the Board's official syllabus, the Hygiene of Food and Drink, were regularly given.—Mr. LEES-SMITH replied: I have no information as to the particular schools in which lessons are given on the basis of the Board's syllabus of Hygiene of Food and Drink, but the extensive circulation of the syllabus shows that it is, in fact, used in a very large number of schools.

Paratyphoid Fever at Epping.

Mr. GROVES asked the Minister of Health the date of the report made by one of his inspectors on the outbreak of paratyphoid fever at Epping; on what date the farm hand, who was said to have been a carrier of paratyphoid germs, ceased handling the milk on this farm; how many cases of paratyphoid fever had been notified in the district since the report was made; and what was the latest date on which there were notifications of this disease at Epping and in the district generally.—Mr. GREENWOOD replied: A medical officer of my department visited the district on Feb. 10th and made a brief report on that day. The farm hand who was suspected of being a carrier ceased handling the milk on Jan. 24th, and was removed to hospital on Feb. 11th; 233 cases of paratyphoid were notified in the Epping urban district and neighbouring districts between Feb. 10th and 28th, some of these being cases of delayed notification. I understand that a few further cases were notified as late as March 2nd.

Charges for Government Lymph.

Lieut.-Colonel FREMANTLE asked the Minister of Health what charges, if any, were made to public authorities and to private purchasers for lymph produced by the Government lymph establishment; and the gross and net annual cost of that establishment, including technical and general staff, purchase and sale of calves, and payments for lymph issued.—Mr. GREENWOOD replied: Local authorities are charged at the rate of 6*d.* a tube for lymph for use in their institutions. No charge is made to public vaccinators or medical officers of health. The gross and net costs of the Government lymph establishment for the year 1929–30 were approximately £15,000 and £13,000 respectively.

Mental Treatment for Out-patients.

Mr. SORENSEN asked the Minister of Health how many committees of visitors had taken steps to provide treatment for out-patients.—Mr. GREENWOOD replied: The Board of Control recently initiated inquiries on this point; and I hope that the information will shortly be available.

National Health Insurance Funds.

Major THOMAS asked the Minister of Health the estimated surplus at present on the National Health Insurance Act; what was the interest upon the surpluses for the last year; and what was the cost of administration for that year.—Mr. GREENWOOD replied: I presume that the hon. Member wishes to have information with regard to the total funds accumulated under the National Health Insurance Acts and not to the surplus funds of approved societies and branches as ascertained at the quinquennial valuations. The total amount of accumulated funds in hand in Great Britain at Dec. 31st, 1929, the latest date for which the information is available, was £126,000,000 approximately. The interest accrued during the year ended Dec. 31st, 1929, was £5,600,000, and the cost of administration (including central administration) for the year was £5,400,000.

Slum Clearance Schemes.

Dr. HASTINGS asked the Minister of Health the number of clearance schemes, and the number of people proposed to be rehoused by them, sanctioned by his department since the passage of the Housing and Slum Clearance Act, 1930.—Mr. GREENWOOD replied: 117 areas in England and Wales, occupied by 24,237 persons, have been declared to be clearance areas under the Housing Act, 1930. These declarations do not require my sanction.

DONATIONS AND BEQUESTS.—Miss Isabella C. Barton, of Torquay, among other bequests, left £5000 to the London Homœopathic Hospital, £1000 to the Hospital for Consumption and Diseases of the Chest, Fulham-road, and £300 to the Convalescent Home at Frimley.—Miss Elizabeth Denley, of Battersea, in addition to small bequests totalling £1300, left £4000 to St. Thomas's Hospital, £3000 each to Dr. Barnardo's Homes and the Royal Sailors' Rest, Portsmouth; £2000 to St. Dunstan's Home for Blind Soldiers and Sailors, £3000 to Bolingbroke Hospital, Wandsworth; £2000 to Weir Hospital, Balham, and £1000 to the Royal Eye Hospital, Blackfriars.—Mrs. Maria M. Fox, of London and Worthing, among other bequests, left £2000 each to the Cheltenham General Hospital and to the Gloucester Royal Infirmary.

MEDICAL NEWS

University of Cambridge.

On March 7th the following degrees were conferred:—
M.B. & B.Chir.—T. I. Evans.
M.B.—C. J. Grosch.

King Edward's Hospital Fund for London.

Hospitals within 11 miles of St. Paul's desiring to participate in the grants made by this Fund for the year 1931 must apply before March 31st to the hon. secretaries at 7, Walbrook, E.C.4 (G.P.O. Box 465A). Applications will also be considered from convalescent homes which are in the above area or take a large proportion of patients from London.

British Social Hygiene Council.

On Tuesday, April 21st, Mr. Maurice Bigelow, professor of biology at Columbia University, New York, and Chairman of the Executive Committee of the American Social Hygiene Association, will lecture on Social Hygiene and the Family at the Marble Arch Rooms, Old Quebec-street, London. The Duchess of Atholl, M.P., will preside. Admission will be by ticket obtainable gratis from the Secretary of the British Social Hygiene Council, Carteret House, Carteret-street, S.W.1.

Instruction for D.P.H.

A three-months' course of lectures and demonstrations on Clinical Practice and in Hospital Administration will be given at the North-Eastern Hospital, St. Ann's-road, Tottenham, N., by Dr. F. H. Thomson, the medical superintendent, on Mondays and Wednesdays at 4.45 P.M., and alternate Saturdays at 11 A.M., beginning Wednesday, April 8th. Applications should be made to the Medical Officer of Health, London County Council, Public Health Department (Special Hospitals), Victoria Embankment, E.C.4.

Tuberculosis Association.

This Association will meet at the Dunn Laboratory, Oxford, from March 26th to 28th. The afternoon of the first day will be devoted to a discussion on Stereoscopic and Postural Radiography of the Chest; on the 27th Dr. Jaquerod will speak on the Natural Processes of Healing in Pulmonary Tuberculosis, and Dr. L. S. T. Burrell and Dr. N. Tattersall on the Future of Artificial Pneumothorax Treatment; and on the last day, after the annual general meeting, Mr. H. Morriston Davies will show a cinematograph film of Thoracoplasty, Dr. J. Crochett will speak on Gelatino-thorax, and the proceedings will close with an exhibition of radiograms. The hon. secretary of the Association is Dr. G. T. Hebert, of St. Thomas's Hospital, S.E.1.

Hospitals at Brighton.

The end of February brought to a close the annual meetings of the governors of the hospitals at Brighton. At the meeting of the Royal Sussex County Hospital Brigadier-General A. C. Brownlow, the chairman, vigorously rebutted the charge of extravagance. He said that some eight years ago these charges were first made, and Sir Napier Burnett, whose advice was asked, reported that there was no ground for considering the hospital was extravagantly managed. Sir Napier urged a tightening up of control which was at once undertaken. There were, however, still people going about talking of alleged extravagance at the County Hospital. It was absolutely unfounded and did a great deal of harm. The report showed that the hospital treated a greater number of cases in 1930 than in 1929. In-patients in 1930 numbered 3212; out-patients 107,504; casualty patients 8224; casualty dressings 23,279. The operating theatres fund had received a grant of £5000 from the estate of Mr. Bernhard Baron, and towards the initial outlay of £15,000 for the theatre block, which it is hoped will be opened in April, £9374 had been received. The report stated that consideration had been given to the superannuation scheme for hospital officers and nurses, but the governors regretted that the financial position did not justify the introduction of the scheme. A quantity of radium had been purchased, and Dr. H. Nethersole Fletcher said that the fact that radium was available had brought many patients to the hospital at a much earlier stage of the disease than would otherwise have been the case, and the result was that many lives had been saved and much suffering alleviated.—At the Sussex Throat and Ear Hospital it was reported that the urgently needed extension was almost complete. The extension provides, in addition to a new out-patients' department, six small wards, three consulting rooms and dispensary, and additional accommodation for the nursing and domestic staffs. Legacies had been applied to current expenditure, and but for these the accounts would show a much larger deficit than £193. Some of the new wards are to be used by patients who are unable to pay nursing home fees, and the charges for these will be sufficient only to cover the maintenance cost, and, perhaps, a little general income for the hospital.—Brighton, Hove and Preston Dispensary is the oldest medical charity existing in the town, having been established in 1809. Its building in Queen's-road was erected in 1847 and here the work has been carried on continuously until June 30th last year. The governors have now disposed of the building to the Independent Order of Rechabites, and the whole of the dispensary work will be concentrated at the northern branch in Ditchling-road. The hospital at Hove, an offspring of the dispensary, is dealing with between 400 and 500 in-patients in a year, and an appeal is to be made for its extension and maintenance.—The financial position of the Sussex Maternity and Women's Hospital was declared to be a really anxious one. Roughly £10,000 a year was needed, and while receipts for services rendered produced about £7000, there was still £3000 to be obtained by subscriptions, donations, and in other ways. The overdraft at the bank was £586. No fewer than 642 patients were admitted during the 12 months, while 984 mothers were attended in their own homes.—At the Sussex Eye Hospital meeting it was announced that negotiations between the governors of the Royal Sussex County Hospital and the Sussex Eye Hospital had been reopened. The scheme under consideration is that of erecting a new eye hospital on land belonging to and adjoining the Royal Sussex County Hospital. The question, it was stated, was being very carefully explored, but no decision had yet been arrived at. A pageant on behalf of the rebuilding fund brought in £4696, but another £7000 at least was needed.—The governors of the Royal Alexandra Hospital for Sick Children were compelled during the year to realise some investments to meet extraordinary expenditure. An overdraft of £3000, it was stated, left no alternative, and after such realisation there still remained a balance due to the bank of £1649.

Queen Charlotte's Birthday Ball.

The date of this function, in aid of Queen Charlotte's Hospital Rebuilding Fund, has been changed from Tuesday, May 19th, to Thursday, May 28th. The ball will take place, as previously announced, at Dorchester House Hotel, Park-lane, W. The ball secretaries are Mr. Seymour W. Leslie and Mr. Digby C. H. d'Avigdor, who may be addressed at 29, Dorset-square, London, N.W.

A BRONZE bust of Mr. A. F. MacCallan, director for some 20 years of the Egyptian Government ophthalmic hospitals, has been placed in the Giza Memorial Ophthalmic Laboratory, Cairo, by his pupils and colleagues the ophthalmic surgeons of Egypt. The bust was unveiled by Sir Percy Loraine on the occasion of the annual meeting of the Ophthalmological Society of Egypt. The work was modelled from life by Mr. Francis Doyle-Jones, A.R.B.S.

Births, Marriages, and Deaths

BIRTHS.

SHELDON.—On March 10th, at Sutherland-avenue, Maida Vale, the wife of Dr. Wilfrid Sheldon, of a daughter.
TOUSSAINT.—On March 9th, at Wilbraham-place, S.W., the wife of Dr. C. H. C. Toussaint, of a daughter.

DEATHS.

CHATER.—On March 5th, at The Victoria Nurses' Home, Pembroke Dock, of pleuro-pneumonia, John Samuel Chater, M.D., formerly of Lincoln, aged 58.
FERGUSON.—On March 2nd, suddenly, Robert James Ferguson, M.D., F.R.C.S., New Dover-road, Canterbury, in his 68th year.
JOHNSON.—On March 4th, at Madeira-mansions, Weston-super-Mare, the Rev. James Bovell Johnson, M.D., aged 78 years.
MCCONNELL.—On March 9th, 1931, in London, James McConnell, M.B., late of Battersea Rise.
PANTING.—On March 3rd, at The Mythe, Malvern, after a short illness, John Panting, M.A., M.D., formerly of Watton, Norfolk.
PERIGAL.—On March 7th, at West Southbourne, Hants, Arthur Perigal, M.D., M.R.C.S., of New Barnet, Herts, aged 82.
RUSSELL.—On March 4th, at Cleveland-square, W., Edmond French Boys Russell, L.R.C.S.I., and L.R.K.Q.P.I.
STILL.—On March 6th, at Twickenham, George Carduo Still, M.B., aged 69.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, March 17th.—5.30 P.M., GENERAL MEETING OF FELLOWS. Ballot for election to the Fellowship. 8 P.M. for 8.30 P.M., PATHOLOGY. Annual General Meeting. Election of Officers and Council. Demonstrations: N. H. Schuster: Gumma of the Lung. C. L. Oakley: Mycosis Fungoides with Dissemination in Internal Organs. J. M. Ross: Tubercle Bacilli in Tissues. G. Hadfield: (*a*) Paraganglioma of the Suprarenal. (*b*) Squamous Metaplasia in Ligneous Thyroiditis. Communications: L. P. Garrod: The Comparative Efficiency of Antiseptics Used in Midwifery. J. E. McCartney and G. W. Moore: An Improved Technique for Mounting Specimens by the Slab Method.

THURSDAY.—5 P.M., DERMATOLOGY (Cases at 4 P.M.). Paper: Dr. G. H. Oriel (introduced by Dr. H. W. Barber): Some Experimental Observations on Eczema of Internal Origin, and other Allergic Conditions. Cases: Dr. S. E. Dore: Monilia of the Tongue, and Syphilis. Monilia of the Nails and Alopecia Areata. Dr. H. W. Barber: Sarcoid. Mr. F. C. Doble: Xeroderma Pigmentosum. Dr. Mary Horan (for Dr. O'Donovan): Melano-carcinoma Cutis. Dr. W. P. Grieve and Dr. E. Biddle (introduced by Dr. A. C. Roxburgh): Cutis Verticis Gyrata. Other cases will be shown.

FRIDAY.—5 P.M., BALNEOLOGY AND CLIMATOLOGY. Discussion: Osteo-arthritis. Opener: Dr. W. Edgecombe. Discussion on Question of the Fusion with the Section of Electrotherapeutics. Members of the Section and their friends will dine together at the Welbeck Palace Hotel, Welbeck-street, London, W.1, at 7.30 P.M. 8 P.M., OBSTETRICS AND GYNÆCOLOGY. Members of the Section are invited by the Western Electric Company, Bush House, W.C.2, to witness their film of Cæsarean Section by DeLee. 8.30 P.M., ELECTROTHERAPEUTICS. Paper: Dr. Chalmers Watson: Radiation in Relation to Human and Animal Life. COMPARATIVE MEDICINE: EPIDEMIOLOGY AND STATE MEDICINE. Members of these Sections are specially invited to attend and take part in the discussion.

LONDON CLINICAL SOCIETY.

TUESDAY March 17th.—8.15 P.M. (at the London Temperance Hospital), Clinical Evening.

HARVEIAN SOCIETY OF LONDON.

THURSDAY, March 19th.—8.30 P.M. (at 11, Chandos-street, W.), Sir Percy Sargent: The Romance of the Pituitary Gland (Harveian Lecture).

CHELSEA CLINICAL SOCIETY.

TUESDAY, March 17th.—7.30 P.M. (at the Hotel Rembrandt, Thurloe-place, London, S.W.). Dinner, followed by a discussion on the Treatment of Menstrual Irregularities, to be opened by Mr. F. J. McCann.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

THURSDAY, March 19th.—8.15 P.M. (in the Royal Army Medical College, Grosvenor-road, Millbank), Laboratory Meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

MONDAY, March 16th.—5 P.M., Mr. C. E. Shattock: Specimens Illustrating Affections of the Kidney.

FRIDAY.—5 P.M., Sir Arthur Keith: The Anatomy and Nerve Supply of the Diaphragm.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

TUESDAY, March 17th.—5 P.M., Dr. Macdonald Critchley: The Neurology of Old Age (Last Goulstonian Lecture).

THURSDAY.—5 P.M., Sir William Willcox: Toxic Jaundice (First Lumleian Lecture).

ROYAL INSTITUTION, 21, Albemarle-street, W.

TUESDAY, March 17th.—5.15 P.M., Mr. C. D. Darlington: Cytological Theory of Heredity.

THURSDAY.—5.15 P.M., Prof. J. B. S. Haldane: Respiration.

FRIDAY.—9 P.M., Prof. E. N. da C. Andrade: Sound, Sand, and Smoke.

SATURDAY.—3 P.M., Lord Rutherford: Alpha-rays.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, March 16th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.

FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases. Clinics. Operations.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, March 16th to SATURDAY, March 21st.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Mon. at 4 P.M., free lecture by Mr. A. E. Mortimer Woolf on Early Diagnosis of Diseases of Biliary Tracts.—METROPOLITAN (GENERAL) HOSPITAL, Kingsland-road, E.8. Wed., free demonstration of Radiology by Dr. G. T. Loughborough at 2 P.M.—ROYAL EYE HOSPITAL, St. George's-circus, S.E. Wed., free demonstration of ophthalmic cases by Mr. Myles Bickerton at 3 P.M.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Special Course in Medicine, Surgery, and Gynæcology occupying mornings and afternoons.—ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, Great Portland-street. Special Course in Orthopædics occupying mornings and afternoons.—WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck-street. Special Course of lecture-demonstrations in Diseases of the Nervous System. Daily at 5 P.M.—ST. JOHN'S HOSPITAL, Leicester-square. Special Course in Dermatology. Every afternoon.—Further particulars from the Fellowship of Medicine.

WEST LONDON POST-GRADUATE COLLEGE, Hammersmith-road, W.

MONDAY, March 16th.—10 A.M., Gynæcological Ward, Genito-Urinary Operations. Skin Department. 11 A.M., Surgical Ward Visit. 2 P.M., Surgical Ward Visits. Operations. Medical, Surgical, Eye, and Gynæcological Out-patients.

TUESDAY.—9.30 A.M., Operations. 10 A.M., Medical Ward Visit, Dental Department. 11 A.M., Throat Operations. 11.30 A.M., Surgical Demonstration. 2 P.M., Operations, Medical, Surgical, and Throat Out-patients.

WEDNESDAY.—10 A.M., Medical Ward Visit, Children's Medical Out-patients. 2 P.M., Operations, Medical, Surgical, and Eye Out-patients. 4.45 P.M., Venereal Diseases Demonstrated.

THURSDAY.—10 A.M., Neurological Department. 11.30 A.M., Fracture Demonstration. 2 P.M., Medical, Surgical, Genito-Urinary, and Eye Out-patients. 2.30 P.M., Operations.

FRIDAY.—10 A.M., Medical Ward Visit, Dental Department, Skin Department. 12 noon, Medical Lecture. 2 P.M., Operations, Medical, Surgical, and Throat Out-patients.

SATURDAY.—9 A.M., Throat Operations. 10 A.M., Medical Ward Visit, Children's Medical Out-patients. Surgical Out-patients.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, March 16th.—12 noon, Dr. Greenfield: Pathology of Cerebral Tumours (II.). 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M. Mr. Leslie Paton: Vestibular Control of Ocular Movements.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Grainger Stewart: Visual Disturbances in Nervous Diseases.

WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Gordon Holmes: Cerebral Tumours.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Carmichael: Nervous Symptoms Associated with Blood Diseases.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, March 19th.—9 P.M., Dr. Macdonald Critchley: Migraine.

KING'S COLLEGE, Strand, W.C.

MONDAY, March 16th, and following WEDNESDAY and THURSDAY.—5.30 P.M., Prof. K. S. Lashley (Chicago): Problems in the Psychology of Behaviour.

CHARING CROSS HOSPITAL MEDICAL SCHOOL, Agar-street, W.C.

SUNDAY, March 15th.—10.30 A.M., Mr. L. R. Broster: Abdominal Emergencies. 11.45, Dr. A. A. W. Petrie: Early Mental Symptoms and their Treatment.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL, University street, W.C.

MONDAY, March 16th, and following TUESDAY.—5.30 P.M., Prof. B. Brouwer: (Amsterdam) Central Nervous System.

TUESDAY.—5.15 P.M., Dr. C. H. Andrewes: Immunity in Virus Diseases.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

TUESDAY March 17th.—4 P.M., Mr. L. Phillips: Ectopic Pregnancy and Abortion.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.

WEDNESDAY, March 18th.—4 P.M., Dr. Saxby Willis: Collapse Therapy in Pulmonary Disease with Cinematograph Demonstration.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.

THURSDAY, March 19th.—5 P.M., Dr. J. A. Willett: Cause and Treatment of Delay in the Second Stage.

CENTRAL LONDON THROAT NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, March 20th.—4 P.M., Mr. F. W. Watkyn-Thomas: Some Cases of Labyrinthitis.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, March 17th.—3.15 P.M. (at the Royal Chest Hospital), Dr. F. E. Saxby Willis: Asthma.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, March 17th.—5 P.M., Dr. G. B. Dowling: Mycotic Diseases.

THURSDAY.—5 P.M., Dr. I. Muende: Pathology Demonstration.

NATIONAL COUNCIL FOR MENTAL HYGIENE.

THURSDAY, March 19th.—5.15 P.M. (at 11, Chandos-street, Cavendish-square, W.), Dr. H. Crichton-Miller: Psychology of Suicide.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, March 17th.—4.15 P.M., Dr. D. E. Core: Early and Remediable Mental Disorder.

FRIDAY.—4.15 P.M., Mr. H. H. Rayner: Demonstration of Surgical Cases.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINIC.

FRIDAY, March 20th.—3.30 P.M., Mr. Townrow: Vascular Lesions of the Ear, Nose, and Throat.

ST. MARY'S HOSPITALS, Manchester.

FRIDAY, March 20th.—4.15 P.M. (at the Whitworth-street West Hospital), Dr. Ward: Nephritis in Childhood.

MANCHESTER VICTORIA MEMORIAL JEWISH HOSPITAL, Elizabeth-street.

WEDNESDAY, March 18th.—4.30 P.M., Dr. C. Jacobs: Some Ocular Manifestations of General Diseases.

ANCOATS HOSPITAL, Manchester.

THURSDAY, March 19th.—11 A.M., Mr. F. H. Diggle: Clinical Demonstration. 4.15 P.M., Mr. H. Platt: Treatment of Fractures of the Upper Limb.

Appointments

JONES, T. S. L., M.B., Ch.B., has been appointed Resident Surgical Officer, Harlow Wood Orthopædic Hospital, Nottinghamshire.

MASSON, H. F., M.B., Ch.B. Edin., Certifying Surgeon under the Factory and Workshop Acts for the Dingwall District of the County of Ross.

London County Council: HALPERIN, R. (Miss), M.B., B.S. Lond., Assistant Medical Officer, Fulham Hospital; REYNOLDS, N. H. (Miss) M.B., B.S. Lond., Assistant Medical Officer, Queen Mary's Hospital, Carshalton; WILDE, J. F., M.B., B.Ch. Dub., Assistant Medical Officer, St. Peter's Hospital; LUMSDEN, K., M.B., Ch.B. Edin., Assistant Medical Officer, St. Charles' Hospital; YOUNG, J. M. M.B., Ch.B. Belf., Assistant Medical Officer, Brook Hospital; PURVES, M. S., M.B., B.S., Assistant Medical Officer, St. Olave's Hospital; PHILLIPS, A., M.R.C.S., L.R.C.P., Assistant Medical Officer, Bow Institution; FORD, R. K., M.D. Lond., Medical Superintendent, St. Olave's Hospital.

Vacancies

For further information refer to the advertisement columns.

Ashton-under-Lyne, District Infirmary.—H.S. At rate of £150.
Barrow-in-Furness, North Lonsdale Hospital.—H.S. £175.
Birmingham, Ear and Throat Hospital, Edmund-street.—H.S. At rate of £150.
Birmingham, Little Bromwich Hospital for Infectious Diseases.—Jun. Asst. M.O. £300.
Bootle General Hospital.—Sen. Res. M.O. £200. Also Jun. H.S. At rate of £150.
Bristol City and County Mental Hospital.—Third and Fourth Asst. M.O.'s. £450 and £350 respectively.
British Homœopathic Association, 43, Russell-square, W.C.—£100 Grant for Post-graduate Study of Homœopathy.
Cambridge, Addenbrooke's Hospital.—H.S. Also Res. Anæsthetist and Emergency Officer. All at rate of £130.
Cardiff Royal Infirmary.—Ophth. H.S. At rate of £75. Also Surgical H.S. and Gynæc. H.S. Each at rate of £50.
Carlisle, Cumberland Infirmary.—Second H.S. Also H.S. to Special Depts. Each at rate of £155.
Chelmsford, Essex, Administrative County of—Jun. Asst. County M.O.H., £500.
Chester Royal Infirmary.—H.S. £150.
Derby, Derbyshire Hospital for Women.—H.S. At rate of £150.
Doncaster, Royal Infirmary.—H.S. At rate of £175.
East Ham County Borough.—Asst. M.O. £600.
East Ham Memorial Hospital, E.—Hon. Ophthal. Surg.
Evelina Hospital for Children, Southwark, S.E.—Hon. Dental Surgeon Also H.S. At rate of £120.
Gloucester, Gloucestershire Royal Infirmary, &c.—First H.S. At rate of £150.
Hackney Hospital, High-street, Homerton, E.—Asst. M.O. £350.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S. and H.P. Each at rate of £100.
Hostel of St. Luke, 14, Fitzroy-square, W.—Res. M.O. At rate of £200.
Huddersfield, Royal Infirmary.—H.S. At rate of £150.
Hull Royal Infirmary.—H.S. to Ophth. Ear, Nose, and Throat Dept. At rate of £150.
Ilkley, Middleton-in-Wharfedale, Sanatorium.—Res. M.O. £250.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.
King's Lynn, West Norfolk and King's Lynn Hospital.—Sen. H.S. and Jun. H.S. At rate of £175 and £125 respectively.
Lancaster, County Mental Hospital.—Asst. M.O. £500.
Leicester Royal Infirmary.—H.P. £125.
Lichfield, Staffs County Mental Hospital, Burntwood.—Third Asst. M.O. £400.
Lincoln County Hospital.—Jun. H.S. At rate of £150.
Liverpool Open Air Hospital for Children, Leasowe.—Jun. Res. M.O. £200.
Liverpool Royal Children's Hospital.—Two Res. H.S.'s for City Branch, Myrtle-street. Each at rate of £100.
Liverpool, Stanley Hospital.—H.P. and Two H.S.'s. All at rate of £100.
Liverpool and District Hospital for Diseases of the Heart.—Research Fellow. £200.
L.C.C.—Part-time District M.O. for City of London. £125.
London Hospital, E.—Sen. Clin. Asst. to Skin and Phototherapy Dept. £150.
London Light and Electrical Clinic, 42, Ranelagh-road, S.W.—Three Hon. Visiting Physicians.
Manchester, Ancoats Hospital.—Two H.S.'s. Each at rate of £100.
Manchester, Monsall Hospital for Infectious Diseases.—Jun. M.O. At rate of £350.
Manchester, Withington Hospital.—Asst. M.O. At rate of £350.
Metropolitan Hospital, Kingsland-road, E.—Sen. H.P. and Sen. H.S. Also Jun. H.P. and Jun. H.S., and Two Cas. O.'s All at rate of £100.
Miller General Hospital, Greenwich-road, S.E.—Cas. O. At rate of £150. Also H.P. and H.S. Each at rate of £125.
Newark General Hospital.—Res. H.S. £175.
Newcastle-on-Tyne, Royal Victoria Infirmary.—Sen. and Two Jun. M.O.'s At rate of £200 and £100 respectively Also H.P.'s and H.S.'s to Special Depts. All at rate of £50. Also Res. Anæsthetist. At rate of £100.
Nottingham General Hospital.—Cas. O. Also H.P. At rate of £200 and £150 respectively.
Nuneaton General Hospital.—H.S. At rate of £120.
Oldham Royal Infirmary.—H.S.'s to Special Depts. Each at rate of £175.
Portsmouth City Mental Hospital.—Jun. Asst. M.O. £350.
Preston, Sharoe-green Hospital, Fulwood.—Jun. Res. M.O. At rate of £104.
Preston and County of Lancaster Royal Infirmary.—H.S. and H.P. Each £150.
Prince of Wales's General Hospital, Tottenham, N.—Res. Sen. and Jun. H.P. and Special H.S. Each at rate of £120. Also Res. Jun. H.P. and Two Jun. H.S.'s. Each at rate of £90.
Reading, Royal Berkshire Hospital.—Cas. O. and Res. Anæsthetist. Each at rate of £150.
Richmond, Surrey, Royal Hospital.—Jun. H.S. At rate of £100.
Rotherham Hospital.—Cas. H.S. £120.
Royal Eye Hospital, St. George's-circus, S.E.—Hon. Asst. Surgeon. Also Clinical Assts.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Cas. O. for Out-patient Dept. £150.
St. Helens Hospital, Lancs.—H.S. £200.
St. John's Hospital, Lewisham, S.E.—Hon. Physician and Hon. Surg.
St. Marylebone General Dispensary, 30, Marylebone-lane, W.—Hon. Surgeon to Ear, Nose, and Throat Dept.
Salford Royal Hospital.—Three H.S.'s. to Special Depts. Also Cas. H. S. All at rate of £125.
Scarborough Hospital and Dispensary.—Two H.S.'s. Each at rate of £126.
Sheffield Royal Infirmary.—Clin. Asst. to Med. Depts. £300.
Society of Apothecaries of London, Water-lane, Queen Victoria-street, E.C.—Examinerships.
Staffs, County Mental Hospital, Burntwood, near Lichfield.—Third Asst. M.O. £400.
Stalybridge, Borough of.—M.O.H., &c. £800.
Sutton, Surrey, New Sutton and Cheam Hospital.—Hon. Pathologist and Bacteriologist.
Swansea Hospital.—H.S. £150.
Taunton, Taunton and Somerset Hospital.—H.P. £100.
Tunbridge Wells and Counties General Hospital.—H.S. £160.
Wallasey Victoria Central Hospital.—Jun. H.S. At rate of £100.
West Bromwich and District General Hospital.—H.S. At rate of £200.
Western Skin Hospital, 44–46, Hampstead-road, N.W.—Hon. Asst. Physician.
Willesden General Hospital, N.W.—Hon. Clin. Asst. for Med. Out-patient Dept. Also H.P. £100.

CENTRAL LONDON OPHTHALMIC HOSPITAL.—On Thursday of last week Princess Marie Louise opened a new wing of this hospital in Judd-street, St. Pancras. The extension, which provides additional beds for private patients and more accommodation for the nursing staff, has cost £24,000. Private patients will pay fees ranging from 6 to 8 guineas a week. A scheme has been instituted whereby patients within a certain income limit can obtain private consultations for a moderate fee.

DR. KERSHAW COTTAGE HOSPITAL, ROYTON.—By his will, dated 1909, the late Dr. John Kershaw, formerly medical officer of Royton, near Oldham, bequeathed £50,000 for the provision of a hospital to be free and open to every inhabitant of the town. Accumulated interest has swollen the fund to £66,000, and the hospital was recently formally opened by Dr. Thomas Fawsitt. The building, which cost £15,000, contains 12 beds, and the balance of the money has been invested to provide the cost of maintenance.

NOTES, COMMENTS, AND ABSTRACTS

"REASONABLENESS" OR HOSPITALS AS FACTORIES.

BY A. R. FRIEL, M.D., F.R.C.S. IREL.

THE object of this paper is to point out some details in which the service which the medical profession renders to the public can be improved.

Our hospitals, at least the well-known ones, try to fulfil two objects—the cure of the sick, and the training of students. When we visit the out-patient department we see a hall thronged with people anxious to enter and pass through a bottle-neck—the doctor's consulting-room. In this room the same man tries to do two things—teach the students, and treat the sick. Now in some clinics abroad the professor in charge does little clinical work. He is available for reference in case of difficulty, but his principal work is teaching. For him a few cases are reserved for demonstration purposes. The attempt to do both things at the same time as a regular procedure—namely, to teach and to treat—adds to the difficulties of each. Division of labour and allocation of tasks is as necessary here for economic efficiency as in other spheres. The majority of patients suffer from common complaints. The treatment of these is well known in general outline and can be prescribed in detail, or applied by assistants. But such assistants should have responsibility. It is regrettable that so often in our hospitals doctors who have neither experience nor responsibility see the old patients and simply write "repeat mixture." To remedy this it seems reasonable that assistants in out-patient departments should hold a responsible position, and that it should be made worth their while to stay at the work. In other words they should be paid a salary.

The Hospital Regarded as an Industry.

Hospitals might with advantage be regarded as large industries where results are assessed in relation to the cost of attaining them. Every modern factory has a system of costings, and these are scrutinised carefully. In the factory the work carried out may be thought of as coming under one of the three headings—Policy, Organisation, and Technique. This division could also be applied to work in hospitals, and in all of them it is possible that improvements in our hospitals may be effected. A system of costings would make it plain in what particulars a change might with advantage be made. Costings should be estimated from the point of view of the patients, the hospitals, and the staff.

It would be well to begin by assessing the patient's industrial disability when he first came, and later when he was discharged from further treatment. The number of visits he had to pay, the distance he travelled, the money it cost him, and the time he spent coming and going and at the hospital should be taken into account.

On the part of the *hospital*, we have the overhead charges, the medicine given to the patient, the dressings used, the cost of certain special investigations, X ray and pathological, and of applications of special forms of treatment such as light, manipulation, electrical, heat, baths, &c.

The *staff* costings should not be merely money statements, but should include also time and energy expended by the doctor and by the hospital staff.

It is not suggested that a system of costings should be instituted in every hospital at once, but an investigation in a hospital of moderate size would furnish much information. Meanwhile the following suggestions might be considered.

Some Suggestions for Improved Efficiency.

The numbers of people who attend each section of the out-patient department can be averaged and times for their visits could therefore be spaced over the time spent by the staff. Thus the hours at which the staff attend would be divided into intervals, ¼ or ½ hours, and so many patients be given *written* appointments for each interval. It would mean much to them to be spared the weary hours of waiting which they have often to endure. The staff would benefit by knowing in advance how many patients they would have to see. It is useless to allow more people to attend than can be adequately treated. Poor people really appreciate arrangements to save their time and allow them to get on with their work. The lessening of energy expended trying to do the impossible and the increase of satisfaction in doing the work better, should enter into the costings on the side of the doctor.

There is a second bottle-neck for many patients after they have left the doctor—the dispensary. Here, again, there is a queue, and more waiting. Additional part-time dispensers and the enlarging of the dispensing department would speed up the work here.

Times are always hard for the poor, but sickness makes even people comfortably off poor. If time and energy can be saved during sickness, the poor man's home is less disorganised, his meals are not omitted, and his temptations to go elsewhere are not increased. Moreover, a saving of time and energy in the out-patient department would leave the medical staff with more time for research. We have to deal with the most complicated machine in the world—the human body—and we have to deal with it while the machine is running, which adds to our difficulty in treatment. Without economy of our available resources progress will be slow, but with capable management there is a hope of advance. A system of costings such as that outlined above would show how lines of policy may be altered with advantage, how organisation can be advanced, and technique in treatment perfected.

I feel confident that "reasonable" action on the above lines would help to solve the problem of the working of out-patient departments.

EXPERIMENTAL TRANSMISSION OF HUMAN LEPROSY.

Dr. H. C. de Souza Araujo has been continuously engaged in the study of leprosy for the last 15 years, not only in Brazil but in most of the countries afflicted with the disease. At a meeting of the Royal Society of Tropical Medicine and Hygiene on Feb. 19th, he recounted in detail his work at the Instituto Oswaldo Cruz, Rio de Janeiro, on the experimental transmission of human leprosy to laboratory animals. His inoculum consisted of florid human lepromata enucleated without skin and triturated with sand and normal saline solution. This emulsion was filtered through cotton-wool and its richness of bacillus content was microscopically observed; when desirable the emulsion was diluted with normal saline solution. The animals were inoculated as soon as possible after preparation of the inoculum.

Sugai (1902–09) found the Japanese dancing mouse the most suitable animal for experimental transmission of human leprosy. Duval (1910–11) confirmed this and showed also that white mice were susceptible. Kedrowsky (1914) infected white mice with a lepra culture of his own growth. Dr. Araujo was successful with white rats and guinea-pigs, and found monkeys readily susceptible; but the animal of choice proved to be the white mouse. Injections of inoculum were given intraperitoneally. In his necropsies, a small series of control white mice showed no acid-fast bacilli, while 90 per cent. of those inoculated revealed acid-fast bacilli in viscera or in exudates. Globies, too, were seen in such quantity in the inoculated mice that they could not be regarded as having all been

merely absorbed from an inoculum and then redeposited here and there. If the globie, as Wade (1928) contends, signifies multiplication of the lepra bacillus, then in many of these mice the *Mycobacterium lepræ* had multiplied greatly; moreover, the longer the mouse lived after inoculation the more lepra-like were the lesions.

Sixty per cent. of the mice showed intra-abdominal nodules. These were either white, and resistant to pressure, containing masses of acid-fast bacilli, and resembling mycetoma grains; or grey, softer, friable, and adherent to mesentery or epiploon, containing less acid-fast bacilli, with a few cells or debris, being probably lymph glands invisible to naked eye in normal mice. Peripherally the liver showed granulomata composed of new connective tissue cells lying within a capsule. They were full of acid-fast bacilli. In the deeper substance of liver there was perivascular infiltration affecting the smaller blood-vessels and masses of acid-fast bacilli. The liver cells outside these lesions were quite normal.

In the experimental transmission of murine leprosy Muir, and Henderson and Landeman (1927) reported production of definite tumours. In 14 per cent. of Dr. Araujo's human-lepra inoculated mice there were small tumours adherent to inner abdominal walls and viscera. The lesions resembled fibroblastomata, or lymphocytoid tumours, and were rich in extra- or intra-cellular acid-fast bacilli. Their centres might show caseation, or spaces left by cholesterol, and M. Torres had pointed out that these lesions were not histologically like typical tuberculous follicles. If the spaces were really caused by cholesterol deposit and not by fat acids, the finding is important, for cholesterol is a powerful defensive agent against external intoxications and infections, and in active leprosy there is hypercholesterolæmia. Fourteen per cent. of the injected mice showed also minute abscesses in the viscera, sometimes appearing like miliary tuberculosis. Smears of these abscesses always disclosed acid-fast bacilli mostly in zoogleic form. Most important of all was the demonstration in one white mouse after inoculation with human lepra material, and in another inoculated with material from lepra-lesion (of human origin) in a mouse, of dermal nodules far from the site of inoculation and moreover accompanied by alopecia. This had not been previously recorded in any work on experimental transmission of leprosy. Rogers and Muir (1925) connected the usual absence of lepra lesions on the human scalp with its dense hairy texture, and this must be equally valid for the difficulty in transmitting human leprosy to the densely hair-covered bodies of laboratory animals. When alopecia occurred in a human leper it was regarded as the result of infection of the sub-follicular layer of skin, with destruction of hair follicles. If this be true then these mice were infected with human leprosy. Bayon (1911) postulated that multiplication of lepra bacilli could be claimed only if definite metastases were found in other organs, and not merely germs at site of injection. Dr. Araujo claimed that his own experimental results demonstrated that many of his injected mice fulfilled that postulate.

So much for this side of the medal with its apparent clear-cut picture of the human lepra infection, in truth, of white mice. But now for the reverse.

Dr. Araujo used lepra material from 20 human lepers. Some of this material unexpectedly gave entirely negative results when inoculated into the white mice, nor could any reason for this be detected. The ineffective material came from lesions in cases clinically and microscopically indistinguishable from those lesions in the cases which proved inoculably effective. Again, on the suggestion of Dr. Gomes de Faria, Dr. Araujo injected intraperitoneally three white mice with 1 c.cm. each of a fine suspension of carnauba wax (*Copernica cerifera*), and three others with 1 c.cm. each of a fine suspension of beeswax (*Apis melifera*). Eight days later one mouse from each group was killed. The carnauba-injected mouse showed no abnormality while the beeswax-injected one presented small white masses scattered over viscera; one wax mass in the liver forming a granuloma-like lesion. Another bees wax-injected mouse was then killed and here also were infra-hepatic white granules adhering to mesentery. Thirty, and 43 days later, respectively, the two other carnauba-wax-injected mice died: nothing abnormal was found in them. Forty-three days after injection the last remaining bees wax-injected mouse was killed. It showed only one white friable granule adherent to epiploon. Smears from organs in these wax-injected mice revealed no acid-fast elements.

Iwanow using lepra bacilli material heated for one hour at 120° C. had obtained as concordant results in guinea-pigs as when using fresh material. The presumably heat-killed bacilli were found still intact in the guinea-pig two and a half months after the injection.

Fraser and Fletcher (1914) found nodules containing acid-fast bacilli in guinea-pigs inoculated with killed culture of Kedrowsky's bacillus. For his part, Dr. Araujo had got negative results with human-lepra material heated by ethyl-alcohol; but treated with 10 per cent. formol the material produced once in three experiments, in white mice, subcutaneous nodules, without alopecia, at a distance from site of injection; and autopsy revealed acid-fast bacilli in the nodules and in liver and kidneys. In a white rat injected with the formol-treated material were found, four months later, three mesenteric granules identical with those produced by the material when fresh. E. Marchoux (1924) showed that *B. lepræ murium* was killed in 15 mins. at 60° C., and that staining methods could not distinguish between living and dead in these bacilli, though that could easily be determined by inoculation.

Finally, Dr. Araujo used human lepra emulsion boiled for one hour—a procedure which might readily be supposed lethal to lepra bacilli. Five white mice were inoculated with it. All came to autopsy 20 to 94 days later. They disclosed sometimes a few, sometimes great numbers of intact acid-fast bacilli, discrete, or in bundles, or in globies. Two of the mice presented nodules, containing acid-fast bacilli, in the abdominal cavity. One of four guinea-pigs inoculated with this boiled material presented on the seventeenth day one intra-abdominal nodule like that found by Iwanow. The nodule contained acid-fast bacilli.

Dr. Araujo declared that the results of his work had not resolved the great difficulties still enmeshing the problem of leprosy. He would draw no conclusions—rather he had reported concrete facts, with the comment, "Leprosy is really one of the most difficult subjects to study."

SODIUM AMYTAL AND THE DISEASED HEART.

Sodium amytal is regarded by some as a highly dangerous drug because of its effect on the lungs if the least overdose is administered. On the other hand, it is extolled in a recent paper [1] for its safety in patients with diseased hearts. The authors find that it has little direct effect on diseased heart muscle, and that as only slight circulatory changes are associated with its administration, and as the tone of the voluntary muscles is maintained, the drug is peculiarly valuable for inducing narcosis in heart disease patients. The case is related of amputation of the leg for gangrene in a man of 64, the subject of auricular fibrillation with myocardial degeneration. Rectal use of sodium amytal with novocain locally was a complete success. Another patient, who had myocarditis and angina pectoris, was relieved of an attack, which did not yield to half a grain of morphia, by an intravenous injection of 3 c.cm. of a 10 per cent. solution of sodium amytal. He went to sleep within three minutes of the injection and slept for 18 hours.

[1] Bower, J. O., Burns, J. C., and Mengle, H. A. K.: Amer. Jour. Surg., 1930, x., 469.

INOCULATION OF INFANTS WITH B C G.

IN a communication to the Paris Academy of Medicine on Feb. 17th Dr. Weill-Hallé, who was the first to administer B C G to human beings, gave an account of follow-up investigations of 1029 infants inoculated with B C G during the seven-year period 1923–30. The infants lived in tuberculous surroundings in 359 cases, in suspect surroundings in 264 cases, and in healthy surroundings in 406 cases. Only 69, or 6·7 per cent., could not subsequently be traced. In 890 cases the children enjoyed good health, and of the 70 who had died only two were definitely known to have died of tuberculosis. They had remained, since birth, in contact with tuberculous parents, and had assuredly been infected before immunity could be established by B C G. Comparing the survival-rate of the B C G children with that of the general population of the same age, Dr. Weill-Hallé published the following Table :—

Age.	General population survivors.	B C G population survivors.
At birth	100	100
1 year	90·2	97·5
2 years	88·4	95·5
3 „	87·6	91·3
4 „	87·0	92·7
5 „	86·7	90·5
6 „	86·4	93·4
7 „	86·1	91·3

On its face value this Table confirms the claim that B C G inoculation, so far from provoking tuberculous casualties in the years immediately following inoculation, effects a considerable reduction of the general mortality. Dr. Weill-Hallé believes that there is a vastly greater risk of B C G degenerating or disappearing entirely in the human body than of regaining its original virulence. In view of the former possibilities, he is in favour of periodic re-examinations of the inoculated and their re-inoculation if necessary.

A MULTIPLE AVITAMINOSIS.

A DISEASE which is claimed to be a multiple food deficiency is described by E. Jenner Wright,[1] in Sierra Leone. The illness is characterised by lesions of the mucous membrane and skin, particularly at the muco-cutaneous junctions; disorders of the nervous system occur at the same time or subsequently. It is said that a cure can be effected by the addition of cod-liver oil and yeast to the diet, and hence the disease is deemed to be due to deficiency of both vitamins A and B. It is, however, defined as distinct from pellagra and beri-beri, though the differential diagnosis from early pellagra does not seem to be very distinct. There is, apparently, little doubt that the condition is of dietary origin, and though a similar syndrome has been observed elsewhere (*decoquée*, in the islands between Mauritius and Madagascar), this is the first time that the ætiology has been so interpreted. As is usual with a deficiency disease the poorest members of the population are affected and especially those who have been for some time out of work—facts which are so usual as to afford data of diagnostic value. The staple food is rice and cassava; dairy products are not available. A daily dose of 2 c.cm. of Radiostoleum (vitamins A and D) cures the mucous membrane condition, but it is not specifically stated that this happens apart from any other alteration in the diet. The mucous membrane lesions are possibly exaggerated and rendered atypical by the superimposition of a monilia infection; with such lesions, were their severity solely due to deficiency of vitamin A, the occurrence of cases showing night blindness and xerosis of the cornea would also be expected; but these are not described. The whole syndrome clears up on provision of a well-balanced diet, with the addition of cod-liver oil and yeast, but the curative diet needs closer investigation and analysis before an ascription of the symptoms to the lack of any special constituent of the B-vitamin complex can safely be made. Treatment with autoclaved yeast or autoclaved marmite might be attempted, and if these failed, pellagra, due to a deficiency of the comparatively heat-stable vitamin B_2 could be ruled out.

Multiple partial avitaminoses, such as this one, are probably all too common among native races the world over and are the abundant fruit of poverty; in the case of West Africa, however, it would seem possible for such a local product as red palm oil, which is an intensely rich source of vitamin A and is already consumed there to some extent, to be made widely available at a reasonable price.

[1] The A and B Avitaminosis Disease of Sierra Leone. London: Harrison and Sons, Ltd., 44–47, St. Martin's-lane, W.C. 2. 1930. Also published in Dietetics in Warm Climates, by J. Neil Leitch. 1930. Harrison and Sons, Ltd. Pp. 367–383.

JEWISH LAW AND AUTOPSIES.

THERE is a belief prevalent that Jewish law puts an obstacle in the way of holding post-mortem examinations, and we are informed that a ruling of the Court of the Chief Rabbi of the British Empire, delivered in 1926 to the following effect still holds good.

Jewish law is against the mutilation of the body, or the handling of it by persons of another faith, inasmuch as it interferes with the prescribed rites appertaining to Jewish ritual. Jewish sentiment has naturally followed Jewish law and is very strongly against post-mortems.

There is, however, a rider to this ruling which runs: In cases, however, where the law of the land demands the holding of a post-mortem, Jewish law would acquiesce, and the relations would be advised in that sense.

OUR OLDEST SUBSCRIBER.

To the Editor of THE LANCET.

SIR,—Sir Temulji Nariman writes you to say that he was born on April 3rd, 1848, and not in 1858, as stated. As I was born on Jan. 4th, 1846, I am his senior by two years.

I am, Sir, yours faithfully,

Crieff, March 10th, 1931. JAMES GAIRDNER.

IMPORTANT PEOPLE.[1]

A BOOK dealing with the appearance and habits of children who are in every case radiantly healthy has an appeal for all; the presence of health is the medical ideal, and much may be learned from studying perfection by those whose direct work generally lies among the imperfect. The important part that sick children play in society, as Dr. Still observed in his recent "History of Pædiatrics," has been observed as long as medicine has had a history, for the needs of small sufferers must throughout the ages have been the first care of parents. It is true that until the seventeenth century, the care of sick children was mainly recognised by subjecting the patients to rites founded on mysticism and a belief in magic, but when pædiatrics became founded on science the study made great strides. The importance of children from the medical point of view is now manifested more by the care displayed in the prevention of disease and the procuring of proper environment than in elaborate therapeutics. In particular to-day the period of childhood is the subject of scientific study. Miss Spender finds the word psychology tiresome from the lips of children's nurses, but its use is a proof that the desire of really understanding children is finding room in the nurses' make-up alongside with the intent to be kind and the need to be firm. Mr. Dowd's pencil drawings illustrate admirably the joy in life possessed by the healthy child, and especially the absorption of the child in the exploit of the moment.

A charming book.

[1] Important People. Sketches by J. H. Dowd. Letterpress by Brenda Spender. London: Country Life, Ltd. New York: Charles Scribner's Sons. 76 pages, illustrations, and 42 pages text. 15s.